



# COMBAT MISSION II

**Game User Manual**

**PDF Addendum**

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## **Safety Information**

*A very small percentage of people may experience a seizure when exposed to certain visual images, including flashing lights or patterns that may appear in video games. Even people who have no history of seizures or epilepsy may have an undiagnosed condition that can cause these .photosensitive epileptic seizures. while watching video games.*

*These seizures may have a variety of symptoms including: lightheadedness, altered vision, eye or face twitching, jerking or shaking of arms or legs, disorientation, confusion, or momentary loss of awareness. Seizures may also cause loss of consciousness or convulsions that can lead to injury from falling down or striking nearby objects.*

***Immediately stop playing and consult a doctor if you experience any of these symptoms. Parents should watch for or ask their children about the above symptoms.children and teenagers are more likely than adults to experience these seizures.***

*The risk of photosensitive epileptic seizures may be reduced by sitting farther from the television screen, using a smaller television screen, playing in a well-lit room, and not playing when you are drowsy or fatigued.*

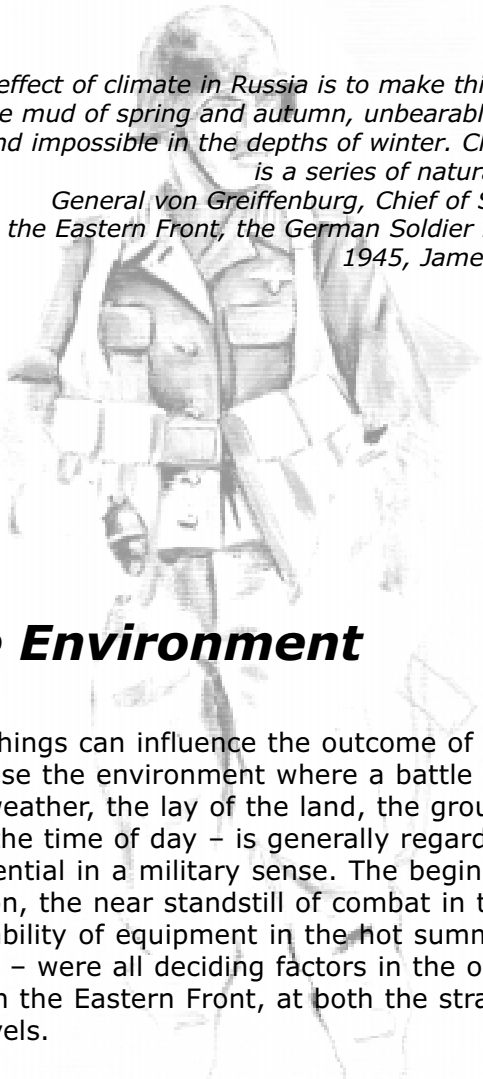
*If you or any of your relatives have a history of seizures or epilepsy, consult a doctor before playing.*

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*"The effect of climate in Russia is to make things impassable in the mud of spring and autumn, unbearable in the heat of summer and impossible in the depths of winter. Climate in Russia is a series of natural disasters." —*

*General von Greiffenburg, Chief of Staff 12th Army  
(War on the Eastern Front, the German Soldier in Russia 1941-1945, James Lucas, pg 78)*

## ***The Environment***

Many things can influence the outcome of wars, but among these the environment where a battle takes place – be it the weather, the lay of the land, the ground conditions and even the time of day – is generally regarded as the most influential in a military sense. The beginning of the mud season, the near standstill of combat in the winter, the unreliability of equipment in the hot summer months in the steppe – were all deciding factors in the outcome of the struggle on the Eastern Front, at both the strategic and tactical levels.

Combat Mission: Barbarossa to Berlin simulates many different environmental conditions, from the seasons to the time of day, to the weather, temperature and ground conditions. Each mix can be a unique challenge. From fighting in a foggy night in deep snow, to struggling through deep mud on a rainy day in spring, to sweating in extreme heat on the steppe – the possibility for scenario designers and armchair generals are manifold. The



following chapter explains the various settings and their effect on gameplay.

## Terrain

There are many different terrain types in the game. Each one has an impact on lines of sight, cover, concealment, and movement. What you need to understand to play the game is that what you see in the game is merely a visual representation of the underlying mathematical 3D battlefield and some abstractions are necessary to keep the game (dis)playable.

Trees are one such abstraction. Although you see individual trees on the map, their actual placement plays no role for the game as such, as can be seen by the fact that tree density can be toggled by the user to fit hardware performance ability. What counts is the “woods” terrain “tile”, as seen by the different kind of ground beneath and around trees. Same applies to – for example - brush terrain, and “graveyards”.

“Open ground”, although seemingly “empty”, is not. Bushes, small dips, high grass and other random features are all taken into account, and so the LOS cannot be traced endlessly even across open ground. More importantly, weapons accuracy decreases dynamically with range, not only because it is harder to hit something farther away, but also because it is harder to see the target at all.

The LOS tool is a very useful aid to understand the terrain on the map better, as it shows what kind of terrain is used for the in-game calculations. You can pinpoint the exact end of woods, the exact corner of a building, the exact point where a wall or hedge starts, etc. Most of the time such things are clear from looking at the map (and your judgement will become better with playing experience), but when in doubt, the LOS tool provides the answer.

Terrain also changes with the different seasons. For example, depending on the scenario's time and date trees can be dense and thick (summer) or leafless (winter). Grain fields also change dramatically with the seasons and

weather. This has a direct impact on the concealment and cover provided by such terrain.

## **Buildings**

There are various types of buildings in the game: wooden shacks (considered extremely light buildings), small farm houses (light and heavy), a tall light building (2 levels), a big blockhouse (2 levels, heavy), a church (basically a special type of the big blockhouse, i.e. 2-level heavy building), and large factory complexes (considered 2-level heavy buildings). Buildings have an impact on concealment and cover, with heavy buildings being more protective than light ones. Light buildings also tend to be reduced to rubble much more quickly than heavy buildings, with a few high-explosive rounds of 75mm caliber or higher being enough to achieve this (one such round is often enough to destroy a wooden shack). Any unit inside a 2-level building which collapses will usually suffer serious casualties.



Lines of sight can be a bit tricky around buildings at first, but most answers are easy when you think about it. In order to be able to look outside of a building without restrictions, a unit needs to be within a few meters of the outside wall (i.e. to peer through windows or other openings). If it is further away than about 5 meters, it can still "see" a few meters into or out of the house, but not far beyond that.

When a building or a unit in a building is fired at, regardless if it is direct fire or indirect fire (from mortars for example), most of the fire hits the outer walls of the building. Units hiding within can still be hurt by the blast from flying stones, glass, shrapnel or even just the blast. However, some rounds can also make it into the building and explode within, e.g. through holes in the outer walls or roof, blasted doors or windows. Such shots can cause severe damage. There is even a very small chance that a round can make it into and THROUGH a building, exploding on the other side!

The interiors of buildings are abstracted and included into combat resolution calculations. Although you can trace an LOS within a building without restrictions (though with

limited range) the chance of enemy units hiding within the same building and remaining unspotted is relatively high (imagine them hiding in another room), but drops dramatically the more time your units spend inside.

There are also two different height levels for buildings. Level one, the ground level, simulates houses that are one to two stories high. Level two simulates houses three to four stories high. These are the only available levels for *Combat Mission: Barbarossa to Berlin*. You cannot place units in church towers.

One thing to keep in mind with buildings is that they are a confined space and can contain only so many soldiers at a time. The general rule of thumb is one squad per corner of a building. But if you try to put a whole platoon into a small farmhouse, don't be surprised to find that one squad has to leave and wait outside.

Watch out when you want to fire weapons with backblast (like bazookas and Panzerfausts) within buildings - this often suppresses the firing unit and there is a good risk that the building will catch fire from the backblast. Vehicles and guns are not allowed to enter buildings. Mortars can enter a building, but cannot fire from it.

### ***Building Damage***

Buildings and bridges display "damaged" or "heavily damaged" labels according to how much damage they have received, and the "Warning Labels" option is on. Additionally, they're listed with a '\*' attached, like "light building\*", or a "\*\*\*" for heavy damage. The building will begin to show damage visually after 40% of the structure is damaged.

### ***Rubble***

These are the leftovers after a building has collapsed. Vehicles may not enter rubble. It provides excellent cover and concealment for infantry. LOS is heavily restricted across rubble, but only to a certain height (which is naturally much lower than the building previously was). There are two forms of rubble in the game - rubble as it originates from a



collapsed building, with parts of exterior walls still standing, and “flat” rubble, which can simulate debris piled up on roads for example. The difference is visual only, as both types of rubble behave the same and cannot be, for example, entered or crossed by vehicles.

### **Scattered Trees**

These are single trees with little or no brush, standing in loose groups together or along a road. Orchards fall into this terrain type as well. They provide only light cover and concealment, but are certainly better than open ground. Do not expect miracles, especially in winter when even a single squad has trouble hiding in scattered trees.



*Note: Scattered trees can also be used to simulate narrow paths in forests, allowing tanks and other vehicles to pass at a slow rate and considerable risk of bogging down.*

### **Woods**

This is the “usual” woods terrain, which includes mixed types of trees, and fairly thick underbrush and bushes. Woods provide good cover and concealment. No vehicles are allowed to enter woods in Combat Mission: Barbarossa to Berlin.



### **Tall Pines**

“Tall pines” represents dense woods terrain, but with only little underbrush and bushes, and provide cover and concealment similar to “Woods”, except that the pines are taller and so are more likely to block elevated lines of sight from tall buildings or hilltops. Movement through tall pines is faster than through woods, and LOS can be traced further due to less underbrush.



### **Hedges**

This is the common type of hedge and is about one meter high, planted or naturally grown, and is passable for tracked vehicles and



infantry (with some impact on speed, however). It provides decent concealment for prone units, but little cover.

### **Stone Wall**

A man-made stone wall, about 1 meter high, and thick enough to block even a direct hit from a tank main round. Walls are passable for tracked vehicles and infantry, albeit at a lower speed. Vehicles behind stone walls can achieve hull-down status, unless the enemy is on a higher elevation. Stone walls provide good cover and concealment, especially for prone units behind it, but not when the attacker is at a higher elevation or attacking from the sides or rear.



### **Wooden fence**

A man-made fence, usually to separate fields, but also very often found in Russian villages around each house. This is only a small obstacle to vehicles and infantry, and can be crossed by all unit types with a small delay. It provides nearly no cover and very little concealment.

### **Brush**

Brush can be used to simulate several things types of terrain such as bushes, wild fields or low trees. It provides good concealment and restricts LOS, but offers little cover. It tends to catch and spread fire quickly.



### **Grain Fields**

Grain fields are just that. The concealment and cover they provide vary with the seasons. Basically considered open ground in winter with not much to hide behind, they can provide decent concealment in summer and less so in fall or spring. Cover, however, is almost nonexistent. Grain fields also increase the chance of vehicles bogging down in them, even with otherwise dry ground conditions. This type of terrain tends to catch and spread fire quickly.



## **Marsh**

Marsh is swampy open ground, providing little more cover than some bushes and grass. It is difficult to walk on even for infantry, and cannot be entered or crossed by vehicles or heavy support weapons of any type.



## **Soft ground**

This can be a muddy field, a shallow marsh or a small stream, and although passable to all units, dramatically increases the danger of vehicles bogging down as well as slows down all movement. It provides no extra cover or concealment.

## **Rough**

Rough represents heavily broken or rocky terrain, impossible for vehicles to cross and accessible only by infantry. It provides good cover and concealment.



## **Rocky**

Similar to "rough" terrain but more easily passable - with usually a number of large rocks or debris to provide decent cover and concealment, but also enough open space for vehicles to pass through.

## **Roads**

Roads come as two types: dirt and paved. Dirt roads are the main type of road encountered in Eastern Europe outside of the big cities. There is no cover or concealment on a road, but movement is fast.



Paved roads have gravel or hard concrete surfaces and are relatively easy to drive on even during muddy ground conditions or snow. However, besides some few main highways and city streets, paved roads are not encountered very often on the Eastern Front.

## **Bridges**

There are three types of bridges - wooden bridges, often encountered across small streams or creeks and two elevations high; stone bridges, spanning small rivers at two elevations high; and tall stone bridges, across major rivers or valleys, four elevation levels in height which allow vehicles and troops to pass under them.



## **Railroad Tracks**

These offer little concealment and almost no cover, and troops do not gain much speed advantage on them (in fact, wheeled vehicles are slowed down, and chances of bogging increase due to the rough surface).



## **Water**

Water tiles are used to simulate rivers or lakes, and cannot be entered by any units except infantry embarked in assault boats. Regardless if there is snow on the ground or not, when temperature is set to freezing and below, water becomes frozen - vehicles and guns are not allowed to enter, but infantry is able to cross ice.



## **Fords**

CMBB features two types of fords, which allow crossing rivers on foot or with vehicles. Shallow fords can be crossed (slowly) by all units, although the chances for bogging down are high - especially for non-tracked vehicles. Deep fords can only be used by infantry units.

## **Slopes**

These are inclines steep enough to prohibit vehicular travel. Infantry can still climb them, albeit slowly.



## **Cliffs**

No unit is allowed to traverse a cliff.

## **Steppe**

This is a special type of terrain, found mainly in Southern Russia. It consists of waist-high grass which provides excellent concealment for hiding infantry, but very little cover. The random map generator in Quick Battles and the editor will use "Steppe" as the default terrain type for all southern maps with "rural" and "flat" or "gentle slopes" settings (see Editor). Of course "Steppe" terrain can also be used to simulate "high grass" on any map.

## **Fortifications**

Fortifications (bunkers, pillboxes, wire, and mines) are available only for the defender, and never in meeting engagement scenarios. They are granted to a side by the scenario designer or can (and in the case of Assault type battles MUST) be bought for Quick Battles. During the Setup Phase of a battle, you are free to move and place them within the constraints of the setup zones, but they cannot be moved during the battle itself.

All forms of fortifications (including mines) may be placed only within a valid setup zone. A minefield is 20m x 20m in size (except for daisy-chain mines, which represent hastily laid mines not dug into the earth, and which are slightly smaller than 20m in diameter), with the mine marker placed in its center. The defender can place minefields next to each other, thereby creating larger minefields, but for game purposes CM treats these as separate 20m x 20m elements. Once a minefield has been spotted, the TacAI will try to move units around it during the Action Phase, or simply refuse to enter minefields and stop a distance away from them. You can not force units to enter minefields, as the movement line will turn red trying to do so, until these have been cleared by engineers using demo charges.

## **Fortified Firing Positions**

Bunkers and pillboxes have a firing arc inside which they can engage targets through a frontal firing slit. Outside of this arc, they are basically impotent. The rear of a bunker or pillbox is its weak point - since this is where the exit doors are located - and can be penetrated even by light ordnance. From close range, however, a bunker/



pillbox is always vulnerable to infantry, which can throw grenades through firing ports. Flamethrowers are especially useful for knocking out bunkers/pillboxes, as well as grenade bundles, demo charges and molotov cocktails. Additionally, ordnance can occasionally score a lucky hit to a pillbox's frontal firing slit, possibly knocking out the pillbox in the process. But this is generally only possible at close range (within a few hundred meters).

*Note: AT gun Pillboxes receive an accuracy bonus, vs. a normal AT gun, because such fortifications have already "ranged in" the area within their firing arc. Range determination is one of the greatest contributors to aiming accuracy, so predetermined and reliable range information greatly increases accuracy (all else being equal).*

### **Barbed Wire & Roadblocks**

Wire can be crossed by infantry or fully-tracked vehicles, but only at a much slower pace. Roadblocks can be crossed by infantry (at a slower pace) but are impassable to vehicles. Roadblocks and wire cannot be placed on water and marsh terrain, as well as not inside buildings. There must be sufficient space to place wire and roadblocks, so when two houses are too close together it might be not possible to do so (or you will have to rotate the wire or roadblock marker to fit in between).



### **Trenches and foxholes**

Each *defending* infantry unit in an eligible location (i.e. not on paved surfaces, in marsh or water or other unsuitable terrain) can dig in at the beginning of a battle, creating a foxhole underneath. The foxhole remains on the map for the duration of the battle (or operation), and can be used by other units (including the enemy) to gain its defensive benefits (mainly cover). Digging in occurs automatically but the player can toggle it on or off with the "Dig In" command.



Also, depending on the parameters of a battle or operation, the defending player can create additional fallback positions using the ALT-F hotkeys during the setup phase of a battle. These additional foxholes can be created

anywhere within a valid setup zone on the map by left-clicking on the map while in ALT-F mode, and the number of available foxholes is equal to the number of non-heavy infantry units on the map. Left-clicking on an already existing foxhole makes it disappear and return to the “foxhole pool”. Hitting ALT-F again exits the foxhole placement mode.

*Note that in Quick Battles which are Meeting Engagements or Probes, neither side is allowed to dig foxholes. And Assaults are the only Quick Battles in which the defender may dig fall-back foxholes.*

In regular scenarios, neither side may dig in during Meeting Engagements. Otherwise, the ability of the defender to dig in is determined by the scenario author.

Trenches are similar to foxholes except they are much larger and provide considerably more cover and concealment for their occupants. Further, they may be placed and rotated during the setup phase like any other unit. In addition, they can be used by infantry to move from one location to another while staying inside the trench, thereby benefiting from its defensive bonus on the way. In fact, it is possible to place a whole trench system on the map by simply linking trenches together (placing them adjacent to one another). Trenches can be rotated like any other unit in any direction desired. Trenches cannot be placed on unsuitable terrain (marsh, water, fords and in buildings), and remain on the map for the duration of the battle (or operation).

Only fully-tracked vehicles are allowed to enter or cross trenches, but do so very slowly and at great risk of bogging.

## **Mines**

There are three types of mines in the game.

### **Antipersonnel Mines**

Lethal to infantry and can cause several casualties within seconds when stumbled upon. Casualties are higher

for infantry units moving quickly through a mined area than when crawling or moving slowly. Once spotted, a mine marker appears in the area. Infantry will refuse to enter such a minefield even when ordered to. They may, however, enter it when in panic or rout. Since mines are dug into the earth, they cannot be placed on paved surfaces or in buildings, in water or marsh or rough terrain.

Sneak (crawl) is always less likely to set off a mine.

Mines are also much less likely to go off if they're \*known\* (i.e. one already went off, and your men are now assumed to be paying more attention and doing things like moving in a single line (or a couple of lines) to minimize further explosions).

So the least mine explosions happen in a known minefield to crawling units.

*Note: Dug in mines are never spotted unless one actually explodes!*

### **Antitank Mines**

Dangerous to tanks and all vehicles, and although not always lethal, can at least immobilize them. Antitank mines are harmless to infantry because infantry is not heavy enough to detonate them. Since mines are dug into the earth, they cannot be placed on paved surfaces or in buildings, in water or marsh or rough terrain.

### **Daisy-Chain Mines**

Hastily-placed anti-vehicle mines that are easily spotted by the enemy because they are above ground. They do not generally cause direct harm, but rather deny the enemy certain approaches, generally across road surfaces. Their real life advantage is that they can be placed MUCH faster than normal minefields and hence were used often in hasty retreats. Daisy-Chain Mines cannot be placed on water or marsh, and not in buildings.

### **Clearing Mines**

Engineers and Pioneers with demolition charges are able to clear gaps through minefields. Simply move them within 25 meters of the minefield and wait. It takes a few

minutes (turns) to clear a gap through the mines. You can of course also target the minefield marker manually.

Additionally, engineers can clear Daisy-chain mines without the use of demolition charges. The number of engineers and their experience affect their speed in clearing mines. Generally a near full squad is needed to accomplish clearing a particular mined area. Minefields can be reduced or eliminated by shellfire (though this will not be explicitly shown - you just have to judge roughly by how many craters you see, and hope).

## **Weather**

It is common military knowledge that weather can in fact dictate the outcome of wars. The German progress (or lack of it in the winter) during Operation Barbarossa - their assault against Russia - is a good example. The Russian ability to bring their air superiority to bear (with decisive results) during periods of clear weather later in the war is another. At the tactical level, bad weather means troops tire more quickly and vehicles get stuck more easily. Movement is generally slower during periods of rain or snow, and visibility can be seriously impaired as well. Simply changing a battle's weather settings can fundamentally alter the way the battle plays out.

### ***Time of Day***

There are four daylight conditions simulated in CM: dawn, mid-day, dusk, and night. Visibility is reduced during dawn and dusk and heavily restricted during night. Nighttime fighting also creates a risk of misidentifying one's own troops as enemy and friendly fire can result. Keep this in mind when separating your forces and/or moving close to enemy positions, and occasionally check your unit's target orders to make sure they have not by mistake decided to fire on their own troops.

### ***Atmospheric Weather***

**Clear** - a nice sunny day with few or no clouds, offering good visibility across long distances. This is the only weather type that allows airplanes to operate in the game.

**Overcast** - the sky is full with dark, low hanging clouds. Visibility is somewhat reduced.

**Rain** - Visibility is reduced substantially. Noises are muffled and sound contacts are considerably more difficult to obtain.

**Fog** - a light mist covers the battlefield and visibility as well as noise are reduced.

**Fog and Rain** - a mix (or more like an addition) of the two above. Visibility and noise are heavily reduced.

**Thick Fog** - you almost can't see your own hand if you stretch it out in front of your face. Visibility is reduced to a mere few meters and the fog reduces the chance for sound contacts.

**Snow** - reduces visibility and has a slightly lesser impact on sound contacts than rain.

**Blizzard** - very heavy snowfall reduces visibility and noise substantially.

### **Ground Conditions**

**Very Dry** - very dry ground conditions increase the chance of fires substantially.

**Dry** - dry ground.

**Damp** - early in the morning or after several days of overcast weather or fog, ground conditions are often damp. This raises the chance for vehicles bogging down when off dirt or paved roads.

**Wet** - after rain showers you tend to have wet ground. The chance of bogging down when off roads is substantially increased, and even the dirt roads pose some danger of bogging.

**Mud** - when it has been raining for a few days, wet ground will turn into mud. Vehicles tend to get stuck in muddy ground (even on dirt roads) quickly and mud also greatly reduces the speed of vehicles and infantry.

**Deep Mud** - after long periods of rain or melting snow, the ground can become a quagmire, what the Russians call "Rasputitsa". Vehicles should stick to roads (paved if possible) and even infantry will find the going slow and tiring through such ground conditions.

**Light Snow** - a few inches of snow. The chance for bogging is increased slightly and the snow affects movement speed a bit, but most vehicles can handle it well. Soft ground remains uncovered by snow during this condition.

**Snow** - roughly 8 inches of snow. Wheeled vehicles will get stuck frequently and even tracked vehicles will find the going tougher. Infantry moves more slowly.

**Deep Snow** - 12 inches or more. Most vehicles will get bogged eventually and infantry movement is slowed down substantially.

## Fire & Smoke

If there is anything to be found on a WWII battlefield more often than casualties, it is smoke and fire, from burning terrain or vehicles, or from smoke rounds used to cover the attacker's approaches or defender's line of retreat.

### Smoke

Smoke in varying sizes comes from burning buildings, fields, woods, vehicles, and smoke rounds from tanks, guns, or artillery. Small smoke shells or small burning vehicles (e.g. Kübelwagen) degrade, but do not always block, LOS through them.

*Designer's Note: Infantry smoke grenades, a source of smoke commonly found in other WWII games is not available in CMBB. Our research shows little credible evidence that this type of smoke was used regularly at the squad level in WWII for tactical purposes. Instead, it appears to have been used for signalling mostly, and we have therefore decided to exclude it from CMBB to prevent its potential unrealistic overuse.*

## **Fire**

The chance of a piece of terrain catching fire depends largely on ground conditions and weather. You will see fewer terrain fires during rain or with wet or snowy ground. On the other hand, very dry ground increases the chances for fires, and sometimes even tracer ammunition from an MG can be enough to spark a blaze.

Terrain fires often start off “small”, and at this stage have no effect on the game except for some smoke. But small fires have the chance to grow and spread depending on overall conditions. If a fire becomes “big” (the whole terrain “tile” (20m by 20m) is burning) units located in that tile are forced to exit the area immediately. If for some reason a unit cannot do this (say it is immobilized), the unit will be destroyed by the fire and any remaining crew will abandon the vehicle/gun immediately and run to safety. Units will also refuse to enter terrain burning with a “large” fire.

Burning terrain and vehicles remain burning for the duration of a battle (and can, in fact, cause adjacent terrain to catch fire eventually). Fires and smoke will cease, and burned buildings will collapse to rubble between the battles of an operation.

## **Fog of War**

Unless you choose to play with “Fog of War: none” (in the Options menu at scenario startup), only friendly forces will be visible on the map initially. Enemies must be spotted by one of your units before they appear on the map. Combat Mission: Barbarossa to Berlin uses a complex spotting model to simulate the limited knowledge of a battlefield commander and what is generally known as Fog of War.

Enemy units can be displayed on the map according to five “spotting levels”:

### **No Contact - Level 0**

No enemy unit is displayed. It’s still out there, but you can’t see it, because none of your units are able to see or hear it. Keep in mind, though, that the enemy might see

you! If you're walking down a quiet road and the enemy is hiding behind some hedges, he might have identified all your units before you even catch a glimpse of him. In fact, your units might be dead before they see where the fire is coming from in such a situation.

### ***Sound Contact - Level 1***

Most wargames allow spotting only when a line of sight exists between the spotter and the target. In *Combat Mission: Barbarossa to Berlin*, sound also plays an important role. If you are close enough, or if the target is loud enough (e.g. a tank racing down a road at full speed or an infantry squad firing its weapons), you can "spot" a unit even when no line of sight exists. Such units are displayed as generic gray icons, and clicking on them reveals SOUND CONTACT in the unit info window. The general type of the unit is displayed as well, e.g. infantry? or tank?, but do not rely too much on this. Additionally, the enemy unit is shown at a location which may be somewhat incorrect (your soldiers are making their best guess by listening), so don't be surprised if the enemy unit seems to move through impassable terrain (or even off-map), and then suddenly "moves" into line of sight in a different (but nearby) location.

### ***First Contact - Level 2***

The enemy unit has moved into line of sight and one of your friendly units has caught a glimpse of it or the enemy has opened fire at you and you see the muzzle flashes. At this point only sketchy details are available. When you click on such a unit, a general unit type is given (Infantry? or Tank?), but not much more than that. Enemy infantry units are always displayed using one soldier figure, regardless of the actual type. Enemy vehicles and guns are always displayed with a generic grey model.

### ***Contact - Level 3***

If the enemy is close enough, is exposed, or has been firing at you for a while, more information becomes available. Enemy infantry units now are classified as squads or teams (e.g. mortar teams, anti-tank teams) and weapons can be spotted, too. Vehicle types - tanks or tank



destroyers or assault-guns - are usually identifiable at this stage.

Infantry is displayed with the corresponding number of figures based on unit strength and vehicles are displayed as a common model of vehicle for the identified vehicle type and the given month and year.

Take careful note of the fact that sometimes your troops - especially the inexperienced ones - can incorrectly identify enemy vehicles, usually as something bigger and scarier than they really are. However, once the spotting reaches level 4 (see below) any "mistakes" are corrected and the true identity of the vehicle is displayed.

### ***Identified- Level 4***

If the unit is sufficiently close or exposed, one of your units will identify it fully. This means that the number of soldiers in a squad or team are displayed in the unit window, as well as the correct model of vehicle, experience of the unit, and more. This is as much information as you will ever get about the enemy.

### ***Lost Contact - Generic Unit Marker***

After a unit has been spotted, it is possible to lose contact with it. The "lost" unit will be graphically replaced by a generic unit marker (each nationality has its own unique marker type- stars for Russians, crosses for Germans, etc.), showing the last known position of the enemy unit. Clicking on such a marker will display the last available information about the unit.

These markers stay on the map until the same unit has been spotted again (even if in a completely different location) or if you approach near enough to the marker to verify that the previously spotted unit is no longer there. In such a case the marker disappears, regardless of whether the enemy has been spotted elsewhere.

### ***Option - Extreme Fog of War***

With the option set to "Fog of War: extreme" it will take a lot longer before your units are able to fully identify enemy units, i.e. reach spotting level 4. Enemy units must

come into very close contact with your troops before headcount, experience and armament become “visible” to you, and many units in cover or far away will never be fully identified for the duration of a battle. In fact, reaching identification level 4 and even 3 will be a rare occurrence in most situations. While more realistic, this option requires more attention from the player, and is therefore not set as default. Otherwise, this option works the same as “Full Fog of War”, which is the default setting explained above.

### ***Option - Partial Fog of War***

With the options set to “Fog of War: partial”, enemy units must still be spotted, but every spotted enemy is automatically fully identified from this point on. This is a good way for less-experienced players to get used to the game system.

### ***Option - No Fog of War***

With the setting “Fog of War: none”, all enemy units on the map will be shown and fully identified, regardless if they are spotted or not. This is a great way for beginners to get a feel for the game, but also for scenario designers who wish to test a battle they made. Mind you though, this works both ways, your opponent is able to see all of your units also when this setting is in effect, even the computer player!

## **SPOTTING**

Units spot best when stationary. Movement, especially running, means that a unit’s field of vision is generally restricted to the direction in which the unit is moving. The same is true for vehicles, as the driver and tank commander are (at least partly) focused on getting to their objective without colliding with obstacles or bogging down. Hiding units also spot worse, as their main task is to keep their heads down, not watch for the enemy.

Spotting is always worst to the rear of a unit, and panicked or broken units relay almost no useful spotting information to the player.

Vehicles are generally much poorer spotters than infantry, especially when buttoned up. In fact, most tanks

have large blind spots within a certain distance around the tank when buttoned up due to the heavily restricted field of view. In CMBB, this has been abstracted into a general rule: Buttoned vehicles have a blind spot for infantry (which is NOT currently targeting the vehicle) within 15m provided the infantry is not in the front 60-degree arc centered on the turret facing.

So don't be surprised when one of your tanks with closed hatches suddenly runs into an anti-tank team hiding just a few meters away from it. Also don't be surprised when YOU (as the player hovering above the battlefield) can see a target that your tank simply will not engage. What you can see is not necessarily what the tank can see!

It's often tactically wise to keep some units stationary on overwatch duty while others advance. Unfortunately, one cannot always afford the luxury of being cautious.

*Designer's Note: In order to prevent the abuse of bailed out crews as disposable scouts, we drastically reduced their ability to spot enemy units. Be warned that if you go moving your crews off into enemy territory the first unit they spot might be their last!*

*Crafts*



*"In addition, a fire fight with Josef Stalin tanks should not be undertaken at less than platoon strength; employment of individual Tigers means their loss."*

*From September 1944 issue of the Nachrichtenblatt der Panzertruppen, report of a Tiger unit which had met the IS-II*

*Stalin tank in combat  
(found in: Soviet Armor Tactics in World War II, Charles C. Sharp)*

## ***The Men and Machines***

Units in Combat Mission: Barbarossa to Berlin represent squads and teams of soldiers as well as individual vehicles and guns with crew. These are (with a few exceptions) the smallest tactical elements that can receive orders – in other words, in Combat Mission you are not telling every individual soldier what to do, but issue orders from the position of a squad or team leader to the whole group.

This is obvious from looking at your units – although you will see individual figures standing on the map, these do not represent single men, but rather a group. In the case of squads, usually three figures (two if you use the "reduced figures" option) represent anywhere from 7-14 men. Teams (including HQs and gun crews) are usually shown as one figure regardless of the actual team size – a design decision to keep squads and teams easily recognizable.

*Designer's note: We would have loved to show every single man on the battlefield, but have decided not to because of restrictions of current computer hardware to display and animate thousands of soldiers on the map, and in order to keep the interface from getting clogged. Individual soldiers and their positions on the battlefield ARE tracked with regard to casualties, however, albeit somewhat abstractly.*

Combat Mission: Barbarossa to Berlin features a tremendous number of units for each of the six nations, including infantry formations, guns and vehicles and other heavy weapons. Listing them all even with a brief overview would be totally beyond the scope of this manual. However, each unit's detailed information can be accessed from within the game and in the editor, by clicking on a unit and hitting the ENTER key. This opens the Detailed Unit Information window in the upper left corner. Detailed stats for each unit, its weapons, and capabilities are displayed here. On the following pages you will find a short explanation of what is shown and tracked by CMDB.

*Crafts*

# Men

## ***Nationality, Division and Type of Unit***

This shows the nationality of the unit, its parent division type, and the unit type, similar to what is shown in the unit information panel described earlier.



Unit: Soviet Rifle Platoon  
 Speed Class: Fast  
 Transport Class: 0  
 Production Cost: 100

Weapon	Count	Acc	Rate	Power	Weight	Cost
1. SVT-40 Rifle	10	7	1	1	0	0
2. Mol. 82mm Mortar	20	25	15	0	0	0
3. PPSh-43 SMG	50	11	0	0	0	0
4. RF LMG	60	55	20	10	0	0
TOTAL EQUIPMENT	140	99	34	11	0	0

## ***Speed Class***

The speed class determines the speed at which the infantry unit is able to move. The speed class a unit belongs to depends essentially on how much heavy equipment it is carrying. There are three speed classes for infantry units (there are some more for other units, explained later in this chapter):

**Slow** - most heavy equipment (e.g. the MG42 heavy machinegun) but also units carrying a lot of extra equipment like artillery spotting teams without radio sets

**Medium** - light machineguns, light mortars (e.g. the 60mm mortar), and spotters with radios

**Fast** - squads, sharpshooters, and other small and mobile infantry teams

Slow and medium speed units CAN use RUN movement orders, but will tire a lot faster than FAST units; if you do not want to exhaust your troops too quickly, RUN orders

should be given to slow and medium units to cover short stretches in emergencies only.

### ***Transport Class***

Ranges from 1 to 9, with 9 representing the largest heavy equipment in the game. Units can only mount vehicles which offer at least the same or higher transport class.

### ***Leadership Abilities***

If the selected unit is an HQ unit, its leadership abilities (if any) are displayed as, for example, "Morale +1" or "Command +2".

### ***Special Equipment***

If a unit is carrying special equipment (e.g. Panzerfaust, rifle grenades, demolition charges, Molotov cocktails, magnetic mines etc.), the type and quantity is mentioned here. Hand grenades are NOT mentioned here separately. Also, if the unit has binoculars (greatly enhancing its long range spotting and identifying abilities), this will be noted here as - you guessed it - "has binoculars".

### ***Weapons & Firepower***

A list of available small arms for the selected unit is displayed. Which weapons are available depends on the nationality and type of the unit. Note that some captured weapons can be assigned to units from game start, depending on their documented historical use (the Germans reportedly loved the Russian PPSH submachinegun for example, and you will often find a number of these assigned to German squads and HQ units)

As the unit takes casualties, individual weapons disappear from the list, showing that the soldier carrying that particular weapon has been put out of action. Sometimes, however, soldiers can exchange weapons. For example, if the soldier carrying a squad's machinegun is hit, another soldier of that squad might drop his own weapon and pick it up.

Beside the weapons listing, a firepower table shows the firepower of each weapon according to the range to a target. The firepower (FP) is shown for all weapons of the same type, e.g. a German Rifle 44 squad has 6 K98 rifles. That means  $6 \times \text{fp } 3 \text{ at } 250\text{m} = 18 \text{ fp}$ . However, the firepower as shown in increments of 40m, 100m, 250m, 500m, and 1000m is a reference for the player only - the game engine uses a more precise system measuring down to the meter.

### ***Eligible for exit***

If a unit is eligible for map exit (as part of a scenario's victory objectives), this will be noted in the right upper corner of the detailed unit info screen.

### ***Info/Kills***

By clicking on the white Info/Kills box in the upper right corner of the info screen, you can toggle the display between unit stats and a summary of how the unit fared in the particular battle so far. To preserve the "fog of war", only verified kills are shown - so if your mortar team takes out a squad hiding in woods and nobody sees it, the "kill" will not be shown here until the battle is completely over.



# **Machines**

## ***Nationality, Division and Type of Unit***

This shows the nationality of the unit, its parent division type, and the unit type, similar to what is shown in the unit information panel described earlier.

## ***Maximum Speed***

This states (in miles per hour and meters per second) the maximum speed the vehicle can go on a paved road. Cross-country movement is generally much slower.

## ***Weight***

Measured in tons (U.S. and metric).

## ***Engine***

The horsepower is used for speed and acceleration calculations. Diesel-powered engines are slightly less likely to catch fire when hit.

## ***Ground Pressure***

Measurement of the vehicle weight and the surface-contact area of its tracks. Higher ground pressure increases the chance of bogging down.

## ***Silhouette***

A numerical value representing the size of the vehicle, modified especially by its height, that affects gunnery accuracy and spotting against it. A value of 100 is "medium size".

## ***Transport Class***

A vehicle can only transport (tow) other units with the same or lower transport class.

## ***Passenger Capacity***

Can be squad, team or none. Units may ride on the deck of a tank for example, or within a passenger compartment on transport vehicles like some halftracks and trucks.

GERMAN COMBAT VEHICLE: STIG (Early 1944)				
Type	Attack Gun			
Maximum Speed	25 mph (41 km/h)			
Weight	30 tons (30,000 kg)			
Slope	300 horizontal (11.5 deg)			
Ground Pressure	14.7 psi (1.25 kg/cm <sup>2</sup> )			
Tracks	50			
Transport Class	2			
Transport Capacity	1000			
	(mm/inch)			
Armor	Front	Sides	Rear	
Upper Hull	50+20/10°	30/15°	30/15°	
Lower Hull	50+20/21°	30/10°	30/15°	
Tow	05			
Smoke Dischargers, radio, telephone, etc.				
100, forward (200)				
Thick Skirt: 75mm L/48, 100 + 40				
Notes				
Armor Penetration vs. Typical Enemy (mm/inch)				
Shell	100m	500m	1000m	2000m
8"	111	110	100	83
30"	111	79	63	47
60"	95	52	40	31
8"	57	53	47	39
30"	50	46	41	34
60"	32	29	27	22
Armor Penetration (AP)				
70mm/100				
4000				
HIGH EXPLOSIVE (HE)				
500 m/100				

## Armor

The armor table gives the thickness and slope of armor for various tank parts (usually turret, upper hull, lower hull, and top) for the front, sides and rear. Other information may include armor quality (values lower than 100% represent manufacturing and metallurgical flaws, common in early Allied vehicles and some late-war German vehicles). Special features like armor skirts (Schürzen) or partly-open vehicles (open top and/or sides) are also noted here, along with "curved" mantlets such as the famous "Saukopfblende" of the German StuGIII, which can provide an effective armor protection substantially higher than the base thickness and slope indicate (depending on which part of the curved armor is hit, thickness and slope can vary to a large degree within a fairly small hit area). When you see a value like "50+20", then the 50 represents the tank's base armor, and the 20 additional bolted-on armor, either as field modification or done by the factory. This increases armor protection somewhat, but bolted-on armor is usually a somewhat less effective than the armor of the same thickness made from a single piece of metal.

## Special Equipment

**Smoke Dischargers** - small chemical packets mounted on the outside of a tank that can create a smoke cloud.

**Nahverteidigungswaffe** - close defense weapon - hurls an HE or smoke grenade from the inside of the tank against any enemy infantry approaching the tank.

**Alternate Rear-facing Driver** - some German armored cars were equipped with a second driver seat in the rear of the vehicle, allowing them to reverse quickly out of enemy view.

**Cupola** - some tanks feature a tank commander's hatch with cupola allowing the tank commander a 360° view around the tank even with the hatch closed. It enhances a tank's close range observation against infantry assaults, even from from the rear.

**1 man turret** - some early war tank models with a crew of 2 have only one man in the turret - meaning that the tank commander is usually also the gunner and loader, and therefore cannot remain unbuttoned and fire the tank's main armament at the same time. This greatly diminishes a tank's spotting abilities while firing and affects rate of fire and accuracy also, as the tank commander has to reload by himself and therefore is forced to take his eye off the sight for each shot.

**2 man turret** - many earlier T-34 models have only two men in the turret - usually a loader and the tank commander/gunner. This greatly diminishes a tank's spotting abilities while firing, rate of fire and accuracy - albeit not as much as a 1 man turret layout. The tank must button up to fire its main armament.

**Radio** - many early war Soviet tanks were not equipped with radios, making inter-platoon communication for armored formations very difficult, having to use hand signs, flares and even whistles to communicate. Tanks without radio have to stay a lot closer to the formation's parent HQ to remain in command, and also lose any command bonus when either the HQ or subordinate unit (or both) are buttoned up.

### **Optics**

All vehicles in game are rated for their optics (described in more detail later in this chapter). When a vehicle or tank has optics better than STANDARD, this is listed here.

## ***Special Features***

**Burns Easily** - some vehicles stow ammunition and/or fuel in such a way that internal damage regularly causes the entire vehicle to catch fire.

**Shot Trap** - certain vehicles (like the early Panther model A) have a design flaw in their external shape, which creates a "shot trap" - a curved surface on the underside of the turret front which deflects incoming projectiles downward into the turret ring, or the weakly-armored hull top, where it often penetrates easily.

**Slow ROF** - certain vehicles are known for their slow "rate of fire", i.e. long reloading times for their main gun. This can be due to design flaws (e.g. a cramped crew compartment) or especially bulky ammunition or cumbersome loading mechanisms.

## ***Turret Speed***

Turreted vehicles (mostly tanks but also some armored cars) are rated for their ability to rotate the turret. Five different speeds are possible: Very fast turret, fast turret, medium turret, slow turret, very slow turret.

## ***Machine Gun***

Most vehicles have one or more machineguns mounted in various places. Most common are bow and co-axial MGs, with the first able to fire only within the vehicle hull's front arc, while the latter can be directed wherever the main gun can point. "Flexible" machineguns, usually top-mounted and meant for anti-aircraft purposes, have a full 360° traverse but can normally only be operated when the vehicle is unbuttoned, though some German vehicles have remote-control capability for these weapons (which, if applicable, is also listed here). Some Russian tanks feature an MG mounted on the rear of the turret, but this usually cannot be fired at the same time as the main gun, as there is no extra crew to man this MG at all times. Machinegun ammo is listed in brackets.

## ***Flame***

Vehicles equipped with a flamethrower have this entry, together with the available "ammo", i.e. flamebursts. Note

that flames fired at longer ranges can use more than one “ammo point” per shot.

### ***Main Weapon***

Gives the caliber, muzzle velocity and blast strength of the main gun, as well as any other special info, e.g. “rear-facing” for vehicles with guns (or mortars) only capable of firing towards the rear of the vehicle. The blast strength is a rough measure that represents, in a single number, the values tracked by the game engine, which are the explosive power and the shrapnel generation of the gun’s shells.

### ***Armor Penetration***

The penetration table states how many millimeters of armor the shell can penetrate at four ranges (100m, 500m, 1000m, and 2000m), for three different armor slopes (0°, 30° and 60°) and the various anti-armor ammunition types that the gun can fire. These values, however, can vary a lot in the heat of battle, and are supposed to give a rough idea only. Also, although only four ranges are shown, the game engine uses much more precise algorithms (down to a fraction of a meter). The table is color coded to correspond to the colors shown for the various armor parts in the unit interface. For each ammo type, also additional information is listed, like the muzzle velocity and type of ammo (explained later in this chapter).

*Crafts*

# Guns

The details screen for guns is a mix of the entries available for infantry units and tanks. Most entries are the same as for infantry units. Additional to that, the MAIN WEAPON is shown, including caliber (e.g. 57mm), muzzle velocity (e.g. 823 m/sec) and a blast value. The latter indicates roughly how lethal the weapon is within a certain range from the impact point.

For guns, the optics (explained in detail further below) are listed here as well, if they are classified as better than STANDARD.

[illegible]

Below that is an armor penetration table, which is intended to give a rough idea of the potential of the gun. It's a rough idea only because a lot of factors influence the actual chance of armor penetration in the heat of battle.

The penetration table states how many millimeters of armor the shell can penetrate at four ranges (100m, 500m, 1000m, and 2000m), for three different armor slopes and the best anti-armor ammunition types that the gun can fire.

Two additional speed levels are available for guns:

**Immobile** - the unit cannot move on its own and has to be towed (usually only heavy guns, e.g. the 88mm)

Flak). Additionally, guns which took an exceptionally long time to be prepared for towing after having been setup for firing, will be noted as "cannot embark during battle". Such units can enter the game map towed and move into position, but cannot embark once they disembark. Keep in mind that vehicles can only tow guns with the same or a lower transport class.

**Very Slow** - usually used for heavier guns which can be pushed by their crews, albeit slowly (e.g. the 75mm AT Gun)



## **Weapons**

### **Small arms**

"Small arms" is a military term describing rifles, pistols, machineguns, and other small-caliber bullet-firing weapons wielded by the individual soldier. Although *Combat Mission: Barbarossa to Berlin* simulates squads and teams rather than individual soldiers, it does treat all weapons of an infantry unit individually.

Small arms and MGs use abstracted "ammo points". When a squad or team fires it expends one ammo point. Infantry units never run completely out of ammunition to simulate the scrounging of ammo found on the battlefield or taken from fallen comrades. Instead, when the last ammo point has been used, ammo is considered to be "low" and the unit tries to conserve its last ammo. Such units fire their weapons rarely and even then primarily in self-defense.

Machineguns on vehicles are treated like other Small Arms. Unlike these, however, ammo counts for MGs are displayed in the unit's Detailed Unit Information window, and the vehicle MGs CAN run out of ammo. Vehicle-mounted flamethrowers sometimes consume even more than one "ammo point" per shot when the target is near the maximum flamethrower range.

### **Long Distance Targeting**

In the case of infantry squads, all weapons of a squad which are effective at the particular range to the target are fired automatically. This means that usually past 400 meters, only the squad's light automatic weapon will fire. As the target comes closer first rifles, and then submachineguns, join in.

### **Ammo Loss Due to Casualties**

Ammo points are reduced whenever a moving team-served weapon (not squad!) suffers casualties. This simulates the "lost" ammo carried by the now-incapacitated men. Take a bazooka team for example. It consists of two men; a gunner and an ammo bearer. If one



of them is hit, expect to see the ammo available for the unit cut significantly. The same is true for machinegun teams, although these usually have more than one ammo bearer which means the ammo loss is not as dramatic.

## **Extra and Reduced Ammo Levels**

During prepared defense situations, units often are awarded (by the scenario designer) extra ammo to “stockpile” within their fortified positions. Even if a unit suffers no casualties, the extra ammo is lost once the team decides to leave its defensive position, because there’s no one to carry it!

Units can also start out with less ammo than they normally can carry. This would be done to simulate units that are under-supplied or have recently had intense combat and have not yet had the chance to acquire replacement ammo fully.

## **Effects of Small-arms Fire**

When a unit fires, the firepower rating is used to determine the chance of causing damage. Many factors are used in the calculations, like exposure of the enemy unit, the terrain it is in, the activity and suppression of both firer and target (running, crawling, hiding), the marksmanship (experience) of the firing unit - just to name a few.

Generally, the higher the outgoing firepower and the higher the exposure of the target, the more casualties can be expected with each “shot”. A random factor is built in, however, as “lady luck” always takes part in any combat situation.

## **Suppression**

Even when no casualties are caused, incoming fire always has a chance to suppress the target and other units nearby. The higher the effective firepower, the higher the chance of suppressing the enemy.

But suppression does not always mean that the enemy goes prone or runs away. Sometimes incoming fire will “only” change the enemy unit’s status from OK to Alerted

or Cautious, which might be enough to cause it to re-evaluate its orders or return fire less effectively.

Small arms fire from a unit (simulating sometimes the firing of a dozen rifles and machineguns at a time) is NOT directed at one pinpoint area only. Instead, each "shot" affects an area around the target unit or zone, in which it can cause casualties or suppression. This area is bigger for the "area fire" command.

## Infantry Casualties

Casualties for infantry squads and teams are tracked on a man-by-man basis instead of an arbitrary "unit strength" rating. When a squad is fired at, the game determines how many and which of its members are hit. When a man (or men) of your unit has been hit, you can see this immediately in the detailed info window, because the weapon carried by that particular soldier is removed from the list, and the firepower ratings adjusted accordingly.

*Example: a German Rifle 1944 squad consists of 6 soldiers armed with the K98 bolt action rifle, two MP40 submachineguns and one MG42 light machinegun. If the squad is hit and suffers one casualty, one of these weapons (and the soldier carrying it) is removed. You might lose a rifle, the submachinegun or - if you're unlucky - the MG42 gunner.*

However, important squad weapons - like machineguns (e.g. MG42s) as well as light anti-tank weapons - might be picked up by another squad member even if the man initially carrying the weapon is hit. In such a case, one of the squad members drops his own weapon and acquires the more important one.

Casualties do not necessarily represent dead soldiers. In fact, most of the soldiers regarded as casualties are not dead, just (more or less) seriously wounded. But the end result is the same since the soldier is not capable of fighting any more and is removed from the squad as a casualty. Only at the end of the battle is the actual distribution of wounded vs. killed determined (randomly). A portion of the casualties sustained might be wounded just lightly and return for subsequent battles (during operations).

Casualties for infantry units have several effects during the course of a game. Besides an adverse effect on a unit's morale, there is a loss of firepower as individual weapons are removed. Additionally, if a heavy infantry weapon (e.g. most mortars and heavy machineguns) loses most of its crew, not only is ammunition lost if the unit attempts to move, but when only one man remains the weapon becomes entirely immobilized because a single man simply cannot effectively carry the weapon, ammo, and personal equipment by himself.

## **Hand-To-Hand Combat**

Up close and personal, this kind of combat usually does not last very long, as one or the other side (and often both) are decimated quickly and either surrender or are completely annihilated. Close combat starts when two infantry units are within approximately 20 meters or so from each other. You can recognize hand-to-hand combat by the sounds of shouts and rifle butts knocking on helmets, as well as liberal use of grenades by both sides. The victor usually is the one that had some combination of superior numbers, close-range firepower (e.g. SMGs), better experience, and suppressing fire from other friendly units.

Normally, small arms like rifles and machineguns are too weak to cause serious damage to armored vehicles. The exception is lightly-armored vehicles like halftracks and armored cars, or "soft" vehicles without any armor (e.g. jeeps, trucks, and assault boats). These can indeed be penetrated and even destroyed by small arms fire. The penetration chances decrease with distance, but the HMG42 can destroy lightly armored halftracks or armored cars out to as much as 200 or 300 meters depending on angle.

But even if no penetration is achieved, small arms fire can still be effective against armored targets. It can cause crew casualties if the target vehicle is "unbuttoned", or force it to button up. Open top vehicles, like the SU-76M tank destroyer or the Hummel assault howitzer, are also vulnerable to small arms fire. Firing rifles from a higher elevation right into the top of such a vehicle usually

achieves good results in Combat Mission: Barbarossa to Berlin, as it would in real life.

The closer the armored target, the more options are available to destroy it. Many units have specialized antitank weapons available later in the war (see SPECIAL EQUIPMENT section), but all infantry squads and HQs have hand grenades, which can be used for a close assault against a tank. Hand grenades work best against open-top vehicles, but can also be used - albeit less effectively - against buttoned up tanks. This simulates the occasional hero climbing on, or right up to, an enemy tank and placing the grenade in a vulnerable spot. Demolition charges and grenade bundles are very useful anti-tank weapons at very close ranges by providing extra "punch", as are rifle grenades (used by the Germans), which can take out light armored vehicles at medium distances. By the far the best close distance anti-armor weapon are magnetic mines, which are placed or sometimes thrown on enemy tanks and stick to the metallic surface of its armor; Molotov cocktails can also be used effectively against open-top vehicles and - to a limited degree - against armored targets.

The main problem with using these weapons is that the infantry unit often needs to get within throwing distance to an enemy tank, and often expose itself to the tank or - much worse - other enemy units covering the tank. There is a good reason why most nations awarded medals for individuals close-assaulting enemy armor, and why a good number of those individuals didn't survive the war...

## **Special Equipment**

Panzerfausts, demolition charges, rifle grenades and other special infantry squad weapons are handled automatically by the TacAI. The player does not give direct orders for the use of these weapons; their actual use is determined instead by the TacAI, but by manually targeting a close-by enemy tank, the TacAI is "encouraged" to use special equipment against that target - if in range.

## ***Panzerfaust***

A short-range, one-shot antitank rocket launcher commonly used by late-war German infantry squads. They come in four different types and three ranges (two types are 30m, one each is 60m and 100m) depending on the scenario date.

If an enemy armored vehicle comes within range, your squad tries to fire its Panzerfaust. However, suppression can reduce the likelihood of this significantly, and additionally your troops will be reluctant to fire at distances close to the weapon's maximum effective range as the chance for a miss is high. Sometimes your troops might even fire a Panzerfausts at enemy infantry if the enemy is heavily dug in and/or your unit is carrying several Panzerfausts and feels it can spare one for antipersonnel use.

## ***Demolition Charges***

Usually carried only by engineers, these bags of explosives are automatically used to clear minefields, destroy enemy units in close combat, or knock out fixed fortifications. This weapon packs a lot of punch and will usually be enough to at least immobilize a tank!

## ***Rifle Grenades***

German squads might be armed with special grenades which can be fired using a modified rifle. They provide a light anti-tank capability at greater ranges than hand grenades or demolition charges.

## ***Grenade bundles***

A bundle of six or more grenades to provide extra "punch" - used often against lightly armored targets, which would normally withstand the impact of one hand grenade alone. An improvised anti-tank weapon. It can take out a tank or most often at least immobilize it, but don't count on it.

## ***Magnetic mines***

Anti-tank charges designed to stick to the metal surface of tank and vehicle armor. Usually placed on a vulnerable

spot on a tank, like top armor, engine compartment cover, the tracks or hatches to maximize damage. During the war, Germany developed a special anti-magnetic paste called "Zimmerit" to prevent magnetic mines from sticking to the tanks. Ironically, Germany's opponents never used magnetic mines.

### ***Panzerwurfmine***

These are hand-held shaped-charge grenades with fabric "wings" or a directional strip that help the charge arrive "head on" when contacting armor after being thrown through the air. The Russian "RPG-43" (not to be confused with the modern Russian RPG) is a similar weapon.

### ***Molotov cocktails***

Essentially, a bottle filled with a flammable liquid, designed to burst into a ball of flame upon impact. There are various designs of Molotov cocktails, ranging from rude (a bottle of gasoline with a piece of cloth, which is ignited before throwing) to sophisticated (specially manufactured glass containers with a mix of gasoline and other chemicals and a more effective ignition mechanism). The end result is usually the same - the target is engulfed in a ball of flame which continues to burn for some time. It's meant for use against armor, though its effects are limited, unless a critical hit against the engine compartment can be achieved, or the armored vehicle is open topped or unbuttoned. The Russians also developed a special launching mechanism for Molotov-like projectiles, called Ampuloment, which was able to hurl a Molotov across bigger distances, and even though widely used, this mechanism never proved to be very effective.

## Anti-tank

### Ammo Types for Guns/Mortars

Ammunition is tracked individually for heavy guns (tanks, ordnance, infantry anti-tank weapons, and mortars). The five types of ammo are:

#### **"he" - High Explosive (HE)**

Rounds of this type carry a significant explosive charge and are intended to generate on impact as many shell fragments (shrapnel) as possible, thereby increasing the lethal radius against soft targets (infantry, lightly armored or open-top vehicles) but sacrificing penetrating power against more heavily-armored targets.

#### **"ap" - Armor Piercing (AP)**

This type of shell (or shot) uses kinetic energy to punch through armor plate and has little or no explosive charge. This makes it ideal for use against armored vehicles but generally ineffective against soft targets.

#### **"hc" - Hollow Charge**

Also referred to as HEAT ammunition, this projectile uses a "hollow" (or "shaped") explosive to focus a thin jet of hot gas against armor plate, literally melting a hole through it instead of smashing through with brute force (like AP ammunition does). Because it does not rely on kinetic energy, a HEAT round's penetrative capability does not decrease over long range.

#### **"c" - Canister**

Canister ammunition is not unlike a shotgun cartridge - a lightweight shell breaks apart (intentionally) and releases several hundred steel balls that spread out laterally. It's deadly against soft targets at short range (within about 200m) but ineffective against hard targets or at long range.

Russians use it in 57mm and 76mm tank guns. Germans use it in their 75mm "short" gun, like on the early StuG III.

## **"t" - Tungsten Core**

Known by the Germans as PzGr40 (Panzergranate 40). This type of projectile is lighter than a standard AP round and can be fired at a higher muzzle velocity. It has a high-density shatter-resistant metal core (usually made of tungsten) with greatly improved penetrative power against armor. The drawback to tungsten ammo is that its smaller (core) caliber and lighter shell mass mean that kinetic energy is lost more rapidly over long distances, and the shell has a tendency to ricochet off steeply sloped armor. But the increase in velocity and shell strength almost always make up for these drawbacks. Tungsten is a relatively expensive material meaning these shells are generally rare. By 1944 Germany suffered from a severe shortage of tungsten and other metals, and so had virtually no PzGr40 available.

## **"s" - Smoke**

These projectiles are designed to generate a thick smoke screen as cover for other friendly forces. Smoke ammo causes no damage if fired against enemy infantry or armor, but generally blocks LOS through it for a short time.

*Designer's Note: understand the above five ammo types as basic categories, used to describe the countless types and models of projectiles used during the war. Internally, Combat Mission: Barbarossa to Berlin tracks the weight, muzzle velocity, ballistic coefficient and size of explosive charge of all the different shell types from all the different guns in the game individually. The AP ammo generally used by the Soviets until April 1944 (uncapped AP) is NOT the same that they use thereafter (ballistic-capped APBC - exceptions: 122mm switches over in August and 100mm never switches to APBC). The APBC is generally more powerful partly because AP ammo was poorly manufactured, especially in 1941, and also because Russian APBC has a blunt nose shape which 'grips' on contact and does reasonably well against highly-sloped armor. NOTE: Russian 45mm AP ammo in 1941 is especially poorly made.*

## **Selecting Ammo Type**

Your units decide, based on your orders and the type of target they are about to fire at, which ammo type to use.



You cannot order a tank specifically to fire tungsten ammo, for example. The tank commander (read: TacAI) is responsible for the choice of ammo and usually tries to first fire some regular rounds to "bracket" the target. The tank commander uses special ammo once a hit is likely to be achieved, but only when the standard type proves ineffective.

## Anti-tank gunnery

The phenomenon of armor penetration by projectiles is a complex matter. Unlike many other wargames, *Combat Mission: Barbarossa to Berlin* simulates the process by modeling real-world physics instead of abstract CRTs (Combat Resolution Tables).

### Hit Chance

First of all, an anti-tank round - regardless if fired from an anti-tank gun, a light infantry anti-tank weapon like a panzerschreck or another tank - has to hit its target. As a guideline, a Hit Chance is shown whenever you order a unit to fire at an enemy armored vehicle. The hit chance is calculated based on many different dynamic factors, which also change constantly during the course of an Action Phase - but it does give the player a rough idea about the capabilities of the firing weapon.

Some factors taken into account when calculating hit chances are

- size of the target (the silhouette rating)
- facing of the target (vehicle sides are usually bigger - longer - than the front)
- distance between firing unit and target
- exposure of the target (it's much more difficult to hit something which is obstructed from view by trees, a stone wall, a house or a slope - see HULL DOWN)
- the accuracy of the firing weapon, which is often directly proportional to its muzzle velocity, i.e. a faster shot means a flatter trajectory and easier aiming
- the experience rating of the firing crew
- number of previous rounds already fired at this target, which allow the gunner to "bracket"

- ammunition type, caliber, and weight
- the optics of the firing unit
- if the firing unit and/or target are moving. The hit chance is dramatically reduced when the firing unit is on the move.

## **Hull Down**

One of the best tactics to enhance the survivability of your armor is to occupy hull down positions. "Hull down" means that only the turret or superstructure is visible to (and hittable by) the enemy, thereby minimizing the target area tremendously (the silhouette of a vehicle is reduced) without sacrificing one's own ability to fire. Hull-down vehicles are also harder to spot in the first place.

Hull-down positions are not as easy to find as one might think, though. What makes it so difficult is that a hull-down position is always relative between the firing unit and the target. It is entirely possible to be hull-down against one tank, while being in full view of another one. Only rarely will you find a natural dip in the terrain large enough to fit a tank which also provides hull-down status in multiple directions. (Note: in some scenarios you might be allowed to dig in your tanks, however, which achieves exactly this result).

Experience is what it takes to spot good hull-down positions. Hull-down positions can be found anywhere, all the time, and not only in "holes" but even on top of a hill. If your tank is far enough off the ridge, only its turret/superstructure will be visible to targets on the opposite side.

The "seek hull down" order in *Combat Mission: Barbarossa to Berlin* is intended to make finding hull-down spots relative to ONE specific spot on the map easier for the average player, but it is a command best used while out of contact with the enemy and represents the ability of pretty much any tank crew to find a hull-down spot given enough time and preparation. For getting hull-down during the heat of combat, you might be better off scout the map yourself and use your best judgement. Here, the LOS or TARGET tool will aid you, as the words "hull down" will

appear over the targetted area or unit as soon as your unit has reach a hull-down position.

## **Misses**

If a shot misses, it **does** not magically disappear. Instead, the round is tracked to its impact point. Since the trajectory of gun rounds is modelled realistically (i.e. rounds drop by gravity as they travel), this might mean that a missed projectile ends up somewhere behind the missed target in the ground or, if fired too short, in front of it. But elevations can change this dramatically, and when a target on a hill is missed, the round can easily travel hundreds or thousands of meters further.

Wherever the impact point lies, damage is caused. If a round which missed the intended target sails further and lands near another unit, damage is assessed just as if the unlucky target was the intended one. It won't happen often, but it can.

## **Armor Penetrations**

When a gun round hits an armored target, it does not mean an automatic kill. Far from it - both Axis and Allies had tanks in service which could shrug off direct hits, especially if the shell came from long range and at an oblique angle.

Some factors taken into account when determining whether a round penetrates armor are:

- armor thickness for front/side/rear as well as top/turret/upper hull/lower hull
- armor slope for all of the above
- Side angle (i.e. obliquity)
- Striking velocity (reduced by air resistance as the shell travels)
- Armor quality (i.e. metallurgical flaws)
- Face hardened or homogeneous armor plate
- Brinnell Hardness Number (BHN)
- Shot-to-plate diameter ratio
- Shell "cap" type and strength
- Special ammo (like tungsten rounds)
- Shot shatter

- Shot traps (a design flaw in the vehicle shape which tends to "catch" shells rather than let them ricochet away)
- Armor skirts ("Schürzen")

*Note: Combat Mission: Barbarossa to Berlin does not use a generic armor "strength", but real-life values taken directly from historical sources: armor thicknesses in millimeters and slopes measured in degrees.*

A successful anti-armor round penetrates the armor, sending molten metal fragments and spray into the crew compartment, and - if the shell also contains an explosive charge - exploding inside the vehicle. In many (but not all) cases this means that the penetrated vehicle is either physically damaged in some fundamental way, members of the crew are incapacitated or panicked, or both. A vehicle so damaged is called "knocked out", and surviving crew members hastily "bail out" of their wrecked vehicle before the next shell arrives. Sometimes the results are even more horrific. If the penetration contacts live ammunition inside the vehicle, or a tank of gasoline, the whole vehicle can burst into flames, otherwise known as a "brew up". Sometimes no one escapes these deadly infernos.

The lethality of a penetration takes into account the mass of armor sent into the interior, the likelihood of the armor to fragment, and the size of the bursting charge of AP ammo, if any (and the chance it might not function properly on penetrations which don't make it cleanly through). You'll find that AP "shot" (which has no explosive capacity) tends to do a better job penetrating armor, but less damage once inside compared to AP "shells" which have an explosive charge. With small guns - especially antitank rifles - it often takes multiple hits to knock out tanks, and often this will be from injuring or killing the crew rather than significant physical damage to the tank itself.

Armor penetrations that penetrate less than 15% "beyond" the armor resistance will be displayed as "partial penetration" and often are less dangerous to the crew of the tank which was hit. (Note: the reduced lethality is not a hard cutoff at 15%, that's just the cutoff to show the 'partial' message).

## **Non-Penetrating Hits**

An armored vehicle can still be damaged even by a hit which does not penetrate the armor. External equipment such as the gun or its optics can be damaged, as well as the vehicle becoming immobilized by a hit to the tracks or a vital engine component. A non-penetrating hit can even injure or kill crewmembers by causing internal armor flaking or "spalling". This happens when the impact force on the outside rips small fragments off the inside of the armor and hurls them around the crew compartment, potentially injuring or killing the crew.

A round can also bounce off and ricochet. This happens mostly when the armor slope and angle of impact (called side angle or obliquity) prevents the round from striking the target plate head-on. If the round lacks the power to penetrate the armor it literally bounces off or even shatters. Ricochets can sometimes cause armor flaking, but are usually harmless and good news for the tank crews.

Ricochets sometimes are "prevented" by the target itself. Pockets in a vehicle's shape that tend to "catch" shells are known as Shot Traps. Look at the underside of a Panther model A mantlet. You can see how a hit would be deflected downward, right into the thin roof of the hull. This was fixed with the later Model G's additional "chin".

Rounds can also shatter upon impact. German shells were made stronger than Allied shells, and the metal could withstand greater stress without breaking apart. Shot shatter happens when an improperly tempered (i.e. heat-treated) shell hits very thick armor and breaks upon contact. Allied shells often were not tempered properly.

The shot diameter-to-plate thickness ratio can have a significant impact on the chance a shell might penetrate its target. The shot-to-plate ratio compares the caliber of the round with the thickness of the armor. A general rule of thumb is that if the ratio is  $<1$  (the plate is thicker than the caliber of the shell), the round is "underpowered" and has a lesser chance of achieving a penetration. If the ratio is  $>1$  (the shell is bigger than the thickness of the armor), the shot is "overpowered" and the chances for a penetration are higher.

## Armor Types

Different qualities of steel and different types of manufacturing have a big impact on the effective resistance of armor. Obsolete or poor manufacturing techniques can cause armor to resist with less capability than one would expect for a given thickness. For example, check out the Model 1943 T-34 tank. Its armor quality is rated at only 90%.

A separate but related concept is the Brinnell Hardness Number (BHN) which is a measure of the metallurgical "hardness" of the armor. Tank armor is generally considered to be "ideal" at approximately 240 BHN. BHN numbers are not displayed in CMDB, but the engine simulates them. Generally speaking, early-war Russian armor tended to be overly hard and brittle, which meant that it could crack apart when struck hard enough. And even a lesser nonpenetrating hit was likely to cause flaking/spalling of the armor into the crew compartment. The same was true for late-war German armor when German industry ran short of proper alloys.

There are also different types of armor: face-hardened and homogenous. Homogenous plate is a largely uniform block. Face-hardened armor has been treated to arrive at a higher "hardness" (measured in the BHN) just on the front, or "face", thus increasing the chance that a shell will ricochet or shatter. Face-hardened armor does have a weakness, though. Because it is more brittle than uniform block, it can catastrophically break apart upon impact.

Generally speaking, "capped" armor piercing shells penetrate more face-hardened armor than homogenous armor, while the reverse is true for basic uncapped AP.

### **Reinforced Turret Front Armor**

Applies to the Tiger only. Some parts of the turret mantlet are thicker than the stated value.

### **Armor Skirts (Schürzen)**

Schürzen is the name for the relatively thin (about 5mm) soft steel plates mounted a short distance (usually a

couple of feet) from the primary flank armor of a tank. Originally designed by the Germans to help protect vehicles from the Soviet 14.5mm Anti-Tank Rifles, they also proved useful against shaped charges used by many types of light anti-tank weapons like bazookas (on the Western Front).

## Gunnery Optics

CMBB is the first wargame seriously tackling the issue of optics, and, based on months of research, tries to accurately simulate its effects on tank duels.

There are seven types of optics in the game. Note that nations other than Germany exclusively use “standard” optics. All six other types are German-only.

*Note: despite months of research, the data we were able to turn up for Soviet optics used throughout the war is extremely sparse. In order to not put the Soviets at a disadvantage without justification other than “rumors” that Soviet optics were generally worse than German optics, we have decided to set all Soviet gun optics to standard values.*

**Standard:** Mediocre quality and magnification, normal field of view. Not listed in the data window.

**Good:** Typical good-quality general-purpose German optics, mostly used by tanks. Crew must be green or better to use without penalties.

**Binocular:** Same as “Good” but allows use of two eyes for better depth perception. Used by early Tigers and Panthers. Crew must be green or better to use without penalties.

**Long-range:** High-magnification German optics, with limited field of view, used by assault guns and tank destroyers. Crew must be regular or better to use without penalties.

**Very long-range:** Extreme magnification power. Used only by late-model Jagdpanther. Crew must be veteran or better to use without penalties

**Dual-Magnification:** Can switch between two different magnification levels, to optimize both spotting and tracking. Used by late-model Panthers. Crew must be veteran or better to use without penalties.

**Narrow:** Cheaper (by German standards) optics of generally good quality but limited field of view. Often used

by lightly-armored self-propelled guns. Crew must be regular or better to use without penalties.

### ***Effects of Optics***

Good magnification allows for better spotting and gunfire accuracy at long range, except in low-light conditions where the greater need for light of high-magnification optics becomes a hindrance, reducing their effectiveness relative to lower-power lens.

Wider field of view allows for quicker target acquisition and tracking, which allows the gun to be aimed (and fired) faster.

Limited field of view can cause difficulty tracking moving targets at close range.

Hot temperature reduces optical performance, especially for German equipment. The reduction is lesser for more experienced crews.

Extremely cold temperature reduces performance of 'standard' optics, especially for inexperienced crews.

Extremely cold temperature increases performance of German optics, especially for experienced crews.



## Artillery

There are two forms of artillery in *Combat Mission: Barbarossa to Berlin*: on-map and off-map. For the sake of this discussion, “artillery” stands for any form of weapon designed to hurl an explosive charge at a designated target. This includes howitzers, mortars, rockets, and naval guns unless otherwise noted. Artillery fire has been heavily changed from what it was in *Combat Mission: Beyond Overlord*, so make sure you read this section carefully, even if you’re familiar with the game.

### Blast Strength

Often much deadlier than small arms are the high explosive rounds from mortars, howitzers and tank guns. The firepower of these weapons is represented by a BLAST VALUE, which is a rough measure of both the size of the shell and the amount of explosive charge it carries.

The blast value helps give a general guide to the strength of an explosion, which increases the closer you are to its center. It also helps combine blast radius and blast strength into one easy-to-use number, though the game engine tracks both phenomena separately. For example, the U.S. 75mm and 76mm HE shells used by lend-lease Sherman tanks are roughly the same size, but have different blast radii. The 76mm has a lesser amount of explosive (TNT), so its blast radius is smaller. If it’s an accurate shot then the shrapnel from the 76mm is (nearly) as deadly as that from the 75mm, because there’s about the same amount of it (the shells are roughly the same size). But if it’s not an accurate shot the shrapnel must therefore travel farther to hit a target. Thus the smaller TNT charge of the 76mm causes less damage since it has less ability to project shrapnel over distance compared to the 75mm round.

The blast value is measured in the same game units as small-arms firepower.

### On-Map Artillery

On-map artillery is represented by actual artillery guns on the map, while off-map artillery is represented by artillery spotter teams. Except for small-caliber mortars

(60mm and 81mm for example) it is rather unusual to have an artillery gun on the battle map, since most of the time artillery batteries were positioned well behind the front lines. They are included in the game, however, to simulate rear guard actions and exceptional circumstances.

While on-map, artillery units behave just like any other units and have their own set of available orders. Some big artillery guns cannot move (they're simply too big and it can take hours to relocate them), but many can be either towed or manhandled (slowly). After moving, however, a gun has to be set up and prepared for firing (the process is automatic - the time it takes to setup a firing position is displayed in the units info screen). Depending on the type of the gun, this can take anywhere between one and several minutes. A timer indicates the time required for this.

Another form of on-map artillery are mortars and howitzers mounted on vehicles, and besides their better mobility, they work just the same as infantry mortars and howitzers in the game. Vehicle-mounted mortars and howitzers cannot disembark from vehicles. Note also that in order to fire some mortars, the vehicle needs to rotate its rear towards the target!

On-map artillery units (both infantry and vehicle based) usually are only able to fire on targets they can see, although an HQ unit can also "spot" for on-map artillery units (see below).

## **Using HQs for Indirect Fire**

When the firing artillery piece is actually on-map a direct LOS to the target is required in order to fire. The exceptions to this are on-map mortars, both infantry and vehicle-mounted which, due to their high trajectory, can perform indirect fire at close range. Usually, mortars require a LOS to be able to fire. However, if a mortar unit is within command radius of an HQ unit, the HQ unit can serve as spotter and the mortar is able to AREA FIRE at locations which are out of its own LOS but within LOS of the HQ unit. However, the HQ unit is not allowed to be HIDING to be able to spot! Additionally, mortars are allowed to fire at Target Reference Points (TRP), even if out

of LOS, but only provided they have not moved from their initial setup positions. It took a lot of time to set up and register mortars to do this sort of shooting, so if you move you lose!

To fire indirectly simply set up everything as described above, and target the mortar as you normally would. The LOS line, if pointing to an area not visible to the mortar team, will still appear to be BLACK. Click where you would like the target to be and, if the HQ commanding the mortar can see it, the targeting line will "stick" showing that an Area Fire order was successfully plotted. If the line does not "stick" it means the HQ does not have LOS to that exact spot. Double check with the HQ unit's LOS to choose a legitimate spot to target. Make sure, however, that the target line from the mortar unit is orange - if it's red, then you're targetting an enemy unit (not an area), and you're ordering the mortar to focus on that target when it moves into LOS; the mortar will hold its fire until this happens.

## **Off-Map Artillery**

Most of the time, an artillery battery is represented on the map by an artillery spotter team. This team is equipped with binoculars, detailed terrain map with overlay grid, and a radio or field telephone. Its job is to spot targets for a particular artillery battery by reporting the location of incoming rounds and adjusting the aim. Spotter teams equipped with a radio are able to move around quicker (as seen by their higher speed class) than those with telephones, since the latter required a wire line to be laid out to their new position while moving.

## **Plotting Artillery Missions**

To call in an artillery strike, simply issue a TARGET or TARGET WIDE order to the artillery spotter team. Target is the normal choice, delivering fairly concentrated fire on a specific area, while Target Wide is useful for larger and dispersed formations of enemy units. When the spotter can actually see the target area, the speed and accuracy of the barrage are greatly enhanced, but it is not required. In other words, you CAN call in off-map artillery anywhere on the map without having to trace an LOS.

## **Artillery Ammunition**

Artillery spotter teams have AMMO displayed in their unit info window just like any other unit. On-map artillery units have a limited number of specific types of shells (HE and usually Smoke). But in the case of a spotter, ammo represents the number of shells (of any type) that the attached battery is allowed to fire. Some types of batteries can fire SMOKE as well as normal high-explosive shells; this is noted in the unit's detailed info screen as well as purchase screen in the editor and for Quick Battles. In this case, each ammo point can be used as either smoke or high-explosive. Rounds used for "spotting" DO count against the battery's total. Note also that a "battery" can consist of anything between two and more than 200 (!) tubes, and EACH shell is counted against the ammo total. An 18 tube battery would therefore use up 36 ammo "points" in two volleys, whereas a 4 tube battery could fire 9 volleys before running out of the 36 ammo points.

## **Delays**

There is a delay between issuing a target order and the arrival of the first rounds, ranging anywhere from about 30 seconds up to 10-15 minutes and sometimes even more. The delay depends primarily on the formation to which the firing guns are attached - Corps and Army artillery take longest to arrive, because they are higher up the chain of command and receiving fire requests from more than just your formation, while Regimental and Battalion assets are usually a lot quicker, since their primary task is local support. Divisional artillery is in between. Delays are further modified by the experience of the observer team as well as nationality, since different nations used different procedures for calling in artillery, with Russians most notably known for pre-determined fire plans and little flexibility, therefore often exceedingly long reaction times - at least in the early years of the war. (NOTE: High-level Soviet artillery can take so long to open fire, that often their only useful purpose is in a pre-planned bombardment - see below). Another important factor for delays is if the target area is in LOS of the spotting team or not. If not, fire delays can be a lot longer for an artillery strike, and the chance for missing the target area altogether rises dramatically.

The ESTIMATED time delay before the strike commences is shown in the artillery spotter's unit info window. Keep in mind that this is only the estimated time and it can take a little less or much longer before the first rounds fall.

Also, during an ongoing barrage, the time between two volleys is indicated here as well, as the guns are re-loaded and/or realigned.

Usually about 30-60 seconds before the full strike, a few "spotting rounds" fall on or near the target. These are needed for the spotter team to adjust the fire properly (an automatic procedure - no input from the player is required). Accuracy for the main strike is considerably better if the spotter has a line of sight to the target - see below: "Accuracy". The artillery strike will continue over several turns until either the ammo is used up, or until the spotter's targeting order is cancelled (or he dies).

A spotting team cannot call for an artillery strike while hidden - it must unhide before the target command becomes available in its order menu, and cannot hide for the duration of the barrage.

## **Pre-planned bombardments**

During the orders phase for turn 1 of a battle (and ONLY then), each FO is able to call in for a pre-planned artillery bombardment which will commence without any delay at a specific point in time during the battle, to simulate a pre-planned bombardment on known or suspected enemy positions - or part of an established fire plan. The default is for the bombardment to begin immediately, but a player can specify a later turn for this preplanned bombardment to begin by using the Q key. Each time you press the key, 1 turn is added to the delay. This pre-planned fire starts at the first second of the turn specified (including turn 1), and is always accurate - see below: "Accuracy".

This pre-planned bombardment order cannot be changed or cancelled and will remain in effect until all ammo allocated for the battery has been used up, even

when the spotter has been subsequently eliminated or has left the map! Keep in mind: this is true also for smoke fire missions ordered during the setup phase!

Note also that while the bombardment commences without delay, the delay time between volleys (for reloading and adjusting) remains in effect.

## **Accuracy**

Artillery fire is not always on target. Depending on the experience of the spotting team, the type of artillery being fired, and whether the target area is in sight of the spotter (which is the most important factor), artillery can miss its mark widely, sometimes resulting in nasty “friendly fire” incidents.

There are two exceptions to this - pre-planned bombardments are always on target (since it is assumed that the necessary calculations have been made ahead of time and the guns have been registered on target), as well as fire (even if out of LOS) on Target-Reference Points (TRPs), which have been likewise pre-registered in a fireplan.

The player receives no feedback if an artillery strike is accurate or not - it is important to watch the battlefield and see where the artillery actually falls. Look for that spotting round - if it's widely off target, chances are that the full barrage is going to be off the mark, too.

## **Adjusting Fire**

When you find your artillery strike to be off the mark, or if you simply want to adjust or “walk” the aiming point a short distance (even after the strike has begun), you will need to adjust your fire. Simply select the spotting team whose fire you want to adjust, and plot a new target point not too far away from the original mark. If the targeting line is light green, you are within the acceptable “quick adjustment” radius of the original aiming point. If the line is blue, you are too far away and the time delay will be the same as if a completely new order had been issued, since the guns have to recalibrate. Note that the targetting line will not turn green when the target area is out of sight of

the FO – hence you cannot adjust your fire and gain the benefit of a shorter command delay if the new target is out of LOS!

Press SPACE to cancel a retargeting order in progress without disturbing the current targeting order if you realize you can't get a "green line" where you want it. Alternatively, and even more convenient, is the "Reset Target" order (hotkey R) which resets the target point (and delay) to what it was at the beginning of the order phase, regardless if you moved the target point or even cancelled the target order altogether. This is especially useful when you "mis-clicked" on a location or simply changed your mind, and allows you to avoid exceedingly long target delays for some of the larger caliber guns otherwise enforced by mistake.

Adjusted fire can STILL be inaccurate, though it is a lot more probable that it will fall on target than the first strike. So you still need to watch the landing of the actual barrage to be able to re-adjust again if needed.

## Target Reference Points

Target Reference Points (TRP) are locations which have been carefully pre-registered on the maps - i.e. all heavy weapons have recorded the coordinates and necessary firing adjustments before the battle, in order to be able to bring fire on such an area with the highest accuracy and in the shortest possible time. This is true for artillery, but also any other heavy infantry weapons on the map!

Usually players put TRPs, which look like red-colored bullseye markers, onto important locations like enemy staging areas, likely defensive strongpoints, road junctions, or probable avenues of attack. In fact, often the first thing to do for a combat unit, sometimes even before digging foxholes, is pre-registering targets for the artillery.

In the game, TRPs are available whenever a side is allowed to purchase fortifications (meaning it had enough time to dig-in and pre-register targets), and the scenario designer decides to include them (or not) for each side (and they can also be purchased for quick battles like any other fortifications). During the Setup Phase (and only

during the Setup Phase), they can be moved freely across the map (unless padlocked) and are not bound by setup zones.

In Operations, TRPs are valid for one battle only, and disappear in subsequent battles.

If a TRP is targeted by an artillery spotter, the time it takes for the artillery strike to arrive is cut drastically. It can take as little as ten seconds for the first rounds to arrive, and never takes more than 1 minute, even for guns with usually much longer firing delays! CMBB simulates that these TRPs are not only registered targets, but also part of a defensive or offensive fire plan, and therefore such fire can be called for by a simple codeword. LOS (or lack thereof) doesn't influence fire delay times or accuracy.

TRPs can also be targeted by on-map mortars even if out of LOS, but ONLY if the mortar team did not move from its original setup position. The reason for this limitation is that the calculations for hitting a particular target point when not in direct line of sight require skill and preparation and the exact knowledge of one's own position relative to the target - this cannot be adjusted on the fly during the span of a battle.

Other on-map ordnance, like antitank guns for example, can use TRPs to their advantage as well, as long as they remain in their original setup positions. When firing at enemy units on or very near a TRP, they gain a considerable accuracy bonus because they are considered to have "boresighted" or "ranged" their weapons to the TRP before the battle.

*Designer's Note: You will notice some very large artillery calibers in the game. We included these enormous weapons for the sake of completeness, because they did have a (rare) presence on the CMBB-scale battlefield. However, if you begin to design scenarios for people other than yourself, we implore you to add heavy artillery (200mm and up) very sparingly if at all to your scenarios. Huge guns just weren't commonly used at the small tactical level and can unbalance a game tremendously. The purchase ratios for Quick Battles, where only a certain percentage of points is allowed to be spent on artillery for each side, is a good indication of what gun calibres are "within limits" for a given battle size.*



## **Air support**

Both sides can receive or purchase close air support (CAS) for a battle. However, the player does NOT control the actions of his planes. They roam above the battlefield, spot and engage targets at their own discretion.

Combat Mission: Barbarossa to Berlin does NOT simulate carpet-bombings or large scale raids. These are outside of the game's scope. Instead, the fighting on the ground is intended to take place AFTER such bombings, and close air support in Combat Mission: Barbarossa to Berlin means the appearance of small formations of fighter-bombers (maybe just a single plane), over which company and battalion commanders have no immediate control.

There are various plane models available for purchase to both Axis and Allies in CMBB, and depending on the models chosen, have different armament layouts, and therefore engagement capabilities. Some planes might be better suited for anti-armor attacks, while others will be better against infantry and other "soft" targets. In order to allow for air cover in smaller battles also, some planes can also be purchased with full armament loadout (expensive) or for simple "strafing" (much less expensive), with the latter usually meaning that a limited number of strafing runs with MGs will be allowed, although the plane could theoretically carry more ammunition/armament.

When you click on an anti-aircraft weapon targeting a plane, you will be able to see the plane model displayed as a tag on the targeting line. Otherwise, planes are not visible in CMBB other than as a shadow on the ground.

How often a plane attacks and conducts strafing and/or bombing runs depends largely on how much anti-aircraft fire it encounters (i.e. how many AA assets the opposition has on the map). Heavy AA fire can make a plane break off its attack prematurely and even become damaged or shot down (this will be indicated as an explosion in the sky, and later displayed in the After Action Report (see the section about AAR)).

Besides dedicated AA (Flak) guns, vehicles equipped with AA machineguns will engage airplanes unless they are

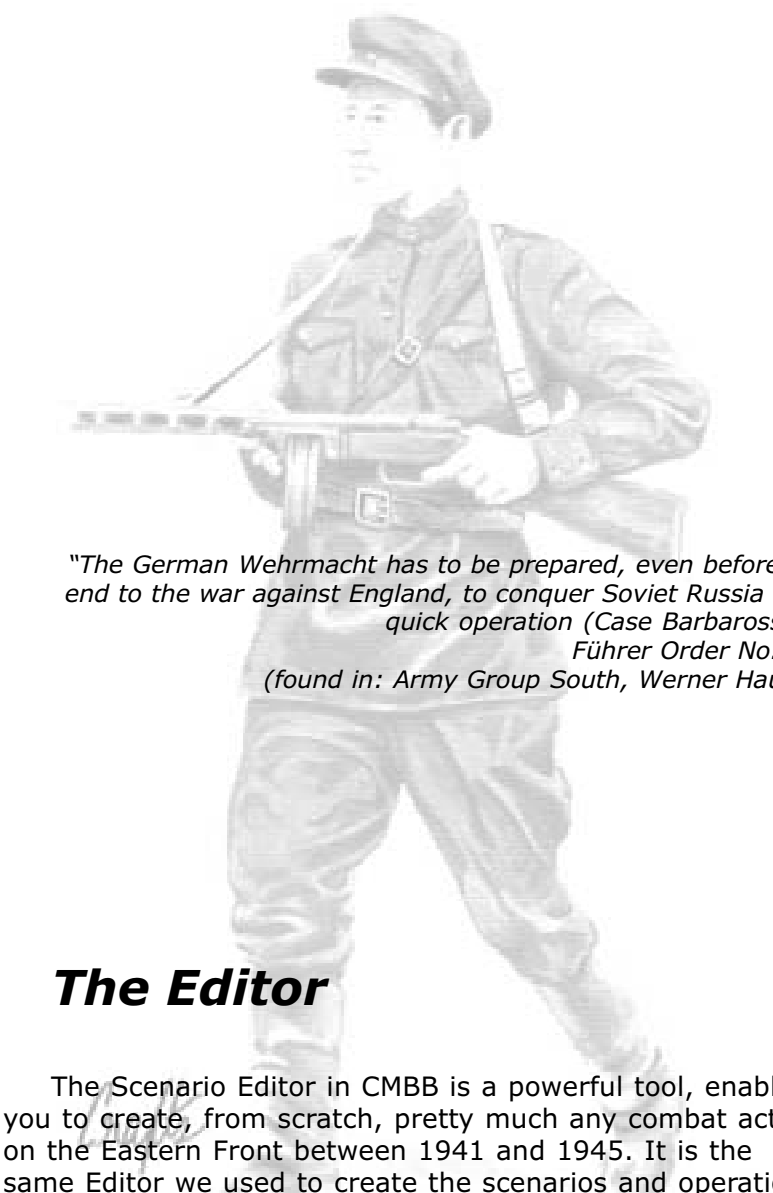
busy firing at ground targets, or are buttoned up and unable to access the MG. Infantry will rarely if ever fire at planes, choosing instead to save ammunition.

Since airplanes have to spot targets just like ground units do, it does improve survivability for the player under air attack to hide units in trees or other cover. A tank sitting out in an open field is an easy target. The TacAI will try to move your units into cover when they are subject to an air attack, but often by that time it's too late.

Fighter pilots can misidentify targets and attack friendly units by mistake. Do not be too surprised when, especially while locked in close combat with an enemy, a couple of "friendly" bombs take out YOUR last tank!

Fighter-Bombers appear only in clear weather (and cannot be purchased in other weather conditions in the editor or Quick Battle purchase screen). No fighter-bomber activity is allowed during the night.

*Note: even though the Russians are known to have employed night bomber runs quite often, research indicates that these were conducted on an operational scale, and not in a close air support role to aid nighttime ground combat.*



*"The German Wehrmacht has to be prepared, even before an end to the war against England, to conquer Soviet Russia in a quick operation (Case Barbarossa)"*

*Führer Order No. 21  
(found in: Army Group South, Werner Haupt)*

## ***The Editor***

The Scenario Editor in CMBB is a powerful tool, enabling you to create, from scratch, pretty much any combat action on the Eastern Front between 1941 and 1945. It is the same Editor we used to create the scenarios and operations included on the CMBB CD, and includes all the features needed to (re)create nearly any historical or fictional battle on the Eastern Front.



When entering the Scenario Editor, you will see the Editor Main Screen, showing you 10 buttons to access the various elements of the editor, as well as listing the Scenario Name (when entering for the first time this is Untitled) and the Scenario Type (the default is Battle).

**NEW BATTLE** – creates a new battle scenario. By clicking on this button, all settings in the editor will be reset and the Parameters screen will automatically be called up. If you have been working in the editor before, you will be asked if you want to save your current scenario first, before all settings are reset.

**NEW OPERATION** – same as above, though the Scenario Type will be changed to Operation, and you will be able to start designing an Operation Scenario. The Parameters screen opens automatically. Again, you will be prompted to save what you have done previously if you have made any changes to the editor settings before clicking on this button.

**LOAD** – lets you load an existing scenario file to edit. Depending on which scenario you decide to load, the Scenario Type will be changed accordingly. You will be prompted to save your current work before loading another scenario.

**SAVE** – lets you save your scenario. You will be asked to specify a file name and a location to save to. The default location is the "Scenarios" folder in the CMBB directory. Even though you can change this, only scenarios contained

in this folder will show up on the playable scenario list in the game main screen. If you want to make a map which can be imported into Quick Battles, change the directory to the "Quick Battles" folder in the CMBB directory. The name you specify for your file before saving will be adopted as the Scenario Name automatically.

**TOURNAMENT SAVE** – this is a special form of saving your scenario, and should be done only after you are finished with it. Tournament saving a scenario means that nobody – not even you – will be able to open and edit the scenario at a later stage! As the name implies this is a great feature for tournaments as it prevents cheating, but it can be a pain when you realize later on that you would like to edit something – because you can't. It is recommended to save a backup copy using the regular SAVE feature just in case.

**PARAMETERS** –opens the parameters screen for the current battle or operation.

**UNIT EDITOR** –lets you purchase units for both sides

**MAP EDITOR** – lets you create a map for the battle or operation, as well as preview the map in 3D and place units and victory locations accordingly

**LOAD BRIEFINGS** – Allows you to load in three text files which will be displayed as briefings to the player(s). Create three different text files in any word processor, each one to do the following:

**Text file 1** – General Briefing, will be displayed to both players before starting the game and choosing sides

**Text file 2** – Axis Briefing, will be displayed to Axis player before setup

**Text file 3** – Allied Briefing, will be displayed to Allied player before setup

These files MUST be in text format (extension \*.txt for PC) for CM to understand them. The names of the files are not important.

The Load Briefings dialog will ask you to locate these files, one after the other. Pay attention to the sequence of

the briefings, which always is: General, Axis, Allies. After finishing, the text of the briefings will be incorporated and saved with the scenario file (do not forget to save your scenario before exiting!) You can click "Cancel" anytime during the process, which will abort it. Any briefings loaded will be incorporated into the scenario, however.

If you want to make changes to your briefing texts at a later time, simply edit them in your preferred text editor. You will then have to go through this menu again to update them for the scenario.

*Note: There is a "hidden" feature that allows you to output the text from an already compiled scenario. This is great if you lost your originals or wish to use someone else's text as a template for your own. To do this, simply hold down the SHIFT and CONTROL keys when you click on the "Load Briefings" button. You will go through the same sequence as when loading briefings, except that you will be asked to specify where to SAVE the briefings TO in plain text format.*

**EXIT** – exits the Scenario Editor. You will be prompted to save your work before doing so.

## Parameters

Each battle's and operation's parameters consist of two parts – the "overall parameters" (which set some global settings for each battle or operation; the "overall parameters" screen is the same for both battles and operations) and the battle or operation specific parameters, which are different from each other.

### Overall parameters

The "Overall Parameters" are very important and should be adjusted before anything else is done in the editor, since they determine which unit types are available and what they cost (with Rarity on) and what the the weather (and ground) conditions will be. Therefore, whenever you click on the NEW BATTLE or NEW OPERATION buttons, the parameters window opens automatically.

*Note: If you should ever wonder why you can't find a particular unit in the Purchase screen, make sure you double-check the Date and Region settings. Units that were not*

*historically available before/after the current Date or in the particular region (e.g. there were no Hungarian troops in Finland) are not displayed.*

**Date** - Select the month and year. June 1941 until May 1945 is available.

The screenshot shows the 'Global Parameters' window. It contains several settings:
 

- Date:** Month set to 'June', Year set to '1941'.
- Defender is:** Map set to 'Europe', Map Control set to 'Manual Control'.
- Region:** Set to 'All Areas'.
- Ground Condition:** Set to 'Dry'.
- Temperature:** Set to 'Cold'.
- Allow Troop Movement:** 'Yes' and 'No' buttons.
- Defender:** 'Manual' and 'Manual' buttons.
- Unit Description:** A text input field at the bottom.

**Region** – possible options are Finland, North, Central, South and All Combined. The latter allows you to mix and match various nations and unit types without historical geographical restrictions.

**Ground Condition** - Very dry, dry, damp, wet, mud, deep mud, light snow, snow, heavy snow. For Operations, this is the ground condition encountered for the first battle – subsequent battles will have the ground condition modified depending on actual weather, ie. after several battles of rain, ground conditions will deteriorate to damp, wet, mud, deep mud and so on.

**Temperature** – ranges from Hot to Extreme Cold. Temperature affects troop fatigue and weapons reliability.

**Defender is** – “not dug in”, “dug in”, “dug in with fallbacks”, or “dug in with vehicles”. This sets the entrenchment options for the defender. “Not dug in” means that defending infantry will not have the benefit of foxholes. “Dug in” means that defending infantry will start with foxholes on map. “Dug in with fallback” means that defending infantry will start with foxholes on map, and

additionally the player will be able to place a number of foxholes as secondary positions. "Dug in with vehicles" means that fallback positions are allowed, and additionally, any vehicle on the map may be dug in for the duration of the battle.

**Map Contours** - Can be 1.25m, 2.5m, or 5m per elevation change. Since there are up to 20 height levels in CMBB, this allows for height differences of up to 100m.

**Allow Sewer Movement** – can be "yes" or "no" for each Axis and Allies.

**Fanaticism** - Same choices available for Axis and/or Allies – "normal" means that the usual morale rules apply. The other settings determine the percentage chance that a squad/unit of the selected type of troops (regular or better, or all troops) will be fanatic, i.e. never panic (except when attacked by flamethrowers) and rarely surrender. Neither player knows beforehand which of their troops will be fanatic.

**Brief Description** - Enter a brief description about the scenario you're creating. This is displayed in the Load Game Window as a quick reference for players.

## Battle Parameters

This screen sets the parameters specific to a battle.

**Time** – Mid-Day, Dusk, Dawn, Night.

**Weather** - Clear, Overcast, Rain, Fog, Rain & Fog, Thick fog, Snow, Blizzard.

**Wind** – sets the wind strength and direction.

**Game Length** - 2-120 turns are possible. Additionally, the game length can be "fixed" (ie. the battle will end automatically after the final turn as set here) or "variable", ie. the battle will end after a variable number of additional turns played after the max. number set here (the number of extra turns depends on how much combat action takes place).



**Type** – Assault, Attack, Probe or Meeting Engagement. This option is important for the “Force Readiness” feature (see THE MISSION) and therefore possibly affects end game calculations.



**Map Edges Friendly To** - All four directions can be toggled to Axis, Allied, or Neutral.

**Map Edge for Exit Points** - If the goal for one side is to fight through and exit the map, the map edge eligible for exit is set here.

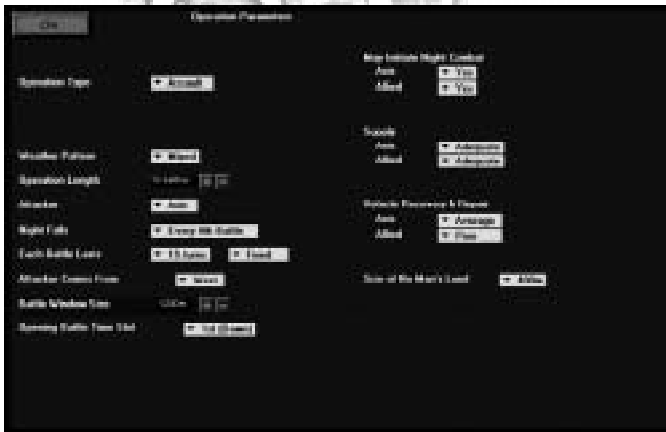
**Flag Type** - There are several flag types – static large flags, static small flags and dynamic flags. These are explained in detail in The Mission. Note that in Meeting Engagements all flags MUST be static. For dynamic flags, the option is available that the one valid flag can be selected by the attacker at game start, or that it will be randomly assigned by the computer.

**Axis Bonus** - Can be positive or negative. Used mainly for unbalanced historical battles where one side is superior to the other. The inferior side is awarded this many points to allow it to “win” when it achieves greater success than expected, given the situation.

## Operation Parameters

This screen sets the parameters specific to an operation.

**Operation Type** - This is the most important setting for an Operation. It defines, in no small way, how the Operation will play out. It might take a few tries to understand the subtleties of these options, but the more you think about historical examples the better your Operations will be.



**Advance** – the Battle map is a portion of the entire operational map, and “slides” forward (or backward) between battles. The attacker wins by reaching the end of the operational map before the time limit is over (this may take several battles). As soon as the attacker reaches the end of the map the game automatically ends, and the victory level of the attacker is determined by how quickly he achieved his goal. If the operation ends before the attacker reaches the end of the map, the victory level for the DEFENDER will depend on how far the attacker came. Units which end the last battle in no man’s land are automatically shifted back to their own front lines. This type of operation is great for fluid fire & maneuver battles.

**Assault** – similar to above with regard to map movement and victory conditions (ie. the attacker wins by reaching the end of the operational map). However - units are NOT

shifted between battles. Some may be cut off when too far forward in no man's land and will be 'padlocked' during the next battle's setup phase, and will not be resupplied. This type of operation is great for assaults on fortified positions, urban or forest battles and firefights "until the last man".

**Static** – The battle map covers the entire operational map, ie. it does NOT "slide". Victory is judged by causing casualties to the enemy and holding victory FLAGS. Units are NOT shifted between battles. Some may be cut off and will be 'padlocked' during the next battle's setup phase, and will not be resupplied. Static operations are essentially a series of connected battles on the same map.

**Weather Pattern** - Good, Mixed or Bad. Combat Mission: Barbarossa to Berlin semi-randomly assigns the weather conditions for each battle based on this setting.

**Operation Length** - 1-20 battles. 10 battles is generally an appropriate length.

**Attacker** - Allied or Axis

**Night Falls** – "No night", or "every other" to "every tenth" battle. Example: a ten battle operation with night on every fifth battle would simulate two days of combat. A ten battle operation with "no night" would simulate fighting ten engagements on the same day.

**Each Battle Lasts** - 10 to 60 turns (minutes). The battle end can be "fixed" (battle ends after the last turn as specified here), or variable (the battle can go on for a variable number of turns after the last turn specified here).

**Attacker Comes From** - North, south, east, or west. This defines the direction in which the operation map moves.

**Battle Window Size** – (only applicable to Advance and Assault operations) the minimum is 1200m, the maximum depends on the overall length of the operation map. Determines how large the map is for each battle.

**Opening Battle Time Slot** - Can be anything between 1st to 10th. 1st is the default setting and means that the

operation will open with the first battle conducted during dawn. If you choose a subsequent setting, the battle will open at the time of day specified for that slot. For example, if an operation is set to Night on every fifth battle, and the opening battle time slot is set to five, the operation will start with the first engagement played during the night.

**May Initiate Night Combat** - Axis/Allies, yes or no. If one or both sides are not able to initiate night combat, they will still be able to reposition their forces during that battle's setup phase.

**Supply** - Ample, Full, Adequate, Limited, Scarce, Severe - determines the amount of ammo replenished between battles.

**Vehicle Recovery & Repair** - Excellent, Good, Average, Poor, None. Determines the chance that an abandoned vehicle can be recovered, repaired, and returned to the game after a few battles.

**Size of No Man's Land** - "0m" to "800m" in 80m increments.

*Note: The Size of No Man's Land should reflect the type of map played on. For open steppe maps, it makes sense to set this to (nearly) the maximum, while for urban maps with short lines of sight, it should probably be 80m or 160m. Setting this option to 0 is generally not advised, since it can lead to the unrealistic event of units within hand grenade range of the enemy being able to relocate to a totally different part of the map in between battles.*

## Maps

The random map generator lets you quickly make a map for your battle, operation or QuickBattle. By setting a number of variables (and according to the region you have pre-set in the overall parameters or for your QuickBattle, you are able to determine what type of map and topography you will have to face.

### Map Type

**Rural** – most of Russia outside of the bigger settlements classifies as rural. Rural maps have virtually no settlements, except only the occasional peasant shack and few roads. Rural maps can be heavily fortified areas or simply open farmland, marshes or steppe, depending on the other settings.

**Farm Land** – you will encounter wheat fields here and some tiny settlements of usually just a few farmhouses scattered across the map. You might see a dirt road or two run through the map. Farm Land can also simulate steppe maps with some settlements.

**Village** – the main feature of such maps will be a small settlement of wooden farmhouses and an occasional church, as well as usually at least one dirt road, and often wheat fields as well.

**Town** – towns are bigger settlements, and will see some two-story buildings, sometimes more than one church and a few roads.

**Large Town** – large towns feature paved roads and blockhouses and usually include parts of the suburban area around it as well.

**Tree Coverage** – Can be set to heavy, moderate, light or open. This directly determines the amount of forest you will see on the map, modified by the other settings. Open and lightly wooded maps in the SOUTH region will usually be STEPPE maps.

**Hilliness** – Large Hills, Modest Hills, Small Hills, Gentle slopes and flat are the options here. This determines how many height differences the computer will assign to the map. The actual height of the hills depends on the “height difference per level” settings made in the Parameters.

**Damage** – can be None, Light, Medium, Heavy, Massive. Determines the number of craters seen on the map, as well as damage to any structures done prior to battle. Urban maps with massive damage will be little more than smoldering ruins. Note that maps with massive damage can put quite a strain on your hardware.

## Editing maps

Of course you can also make your own maps from scratch in the Map Editor. These can be used for operations or battles, and can even be saved and later imported for Quick Battles!

### **Basic interface**

**Done** – moves you back to the Editor main screen

**Preview** – lets you preview the map in 3D mode. This is where you place units, fortifications and victory flags on the battlefield, or simply double-check your map. Double checking is important because the 2D editor map does not give any indication of lines of sight, which is an important part of designing a map. Also, you can evaluate the visual appeal of your map and check for any imperfections, as these are quickly visible in 3D view mode.

*Note: when you save your scenario to disk, the last camera position you used is saved as well, and becomes the “opening shot” of the 3D battlefield for players. This is true for both sides – use the “\” hotkey to switch between Allied and Axis view. Both views are saved independently. This way you can determine what the Allied and Axis players will see when they first enter a battle or operation.*

**Height is ON/OFF** – Shows or hides the height information on every terrain “tile”. The default elevation level is 7 and no number is shown on the map tiles for that value. Possible elevations range from 0 to 19. Each

elevation represents a height difference of 1,25, 2,5 or 5 meters, depending on the parameters set for that map.

**Place Terrain** – Lets you place terrain “tiles”. Each “tile” represents an area of 20 by 20 meters. Click on a terrain tile on the left hand palette to select it, then click anywhere on the map grid to place it. You can also Shift-left click to place a “square” of 5 by 5 tiles – good for filling large areas quickly.

By keeping the left mouse button pressed, you can simply “paint” a map with the currently selected terrain feature. The currently selected terrain is highlighted, and a short description is shown above the terrain “palette”.

In order to place “landmarks” (a short text label describing terrain features, objectives, and historical areas, visible on the 3D map for both players), you have to use the CTRL-left click combination. This will open a new window in which you can enter the name of the landmark. You can notice landmarks by a small yellow triangle within the tiles they have been placed into. You can erase landmarks by CTRL-clicking on a tile with a yellow triangle and erasing the entered text description.

**Change Height** – Allows you to adjust the elevation of each tile. Use the + and – keys to adjust the “current” elevation that each subsequent click on the map will set. Again, shift-left click allows you to fill an area of 5 by 5 tiles. You can also “paint” elevations just like terrain tiles.

**Setup zones** – Allows you to define setup zones for both sides. Each side has three (color-coded) setup zones. There are no restrictions on how many tiles a setup zone has to consist of, nor do the setup zone tiles have to be adjacent to each other. Shift-left click and “painting” works for setup zones as well.

**Width, Height** – sets the size of the map. Maximum area for a Battle map is 9 square kilometres (roughly 3km by 3km), though neither dimension may exceed 4 km. An operation map may be 6000m along the axis of advance (set in the parameters under “Attacker comes from...”), and 4000m across for a total of 24 square kilometres! Smaller maps are recommended, though.

You can adjust the size of your map at any time – and from all four directions. In order to extend/cut the map from the north/east, simply click on the appropriate Height/Width buttons. If you hold SHIFT and click, the map will be cut/extended from west/south respectively.

**Compass** – “Scrolls” the map grid up, down, left or right if less than the whole map grid fills your screen.

**Down Arrow, Up Arrow** – lets you access the remaining parts of the terrain tiles “palette”, if not the whole palette is visible on your screen.

## **Saving Maps for Quick Battles**

When you intend to make maps which can be later imported into a Quick Battle, make sure that you click on NEW BATTLE before starting on your map. Operation maps cannot be imported! Also, CM provides a special directory for maps designed for Quick Battles called “Quick Battle maps”, which is the default directory opened when importing maps, so make sure you save your map into that directory to be able to quickly find it later on.

When making maps for Quick Battles, you can but don't have to purchase units and/or assign setup zones. The former CAN be imported into Quick Battles (but don't have to), and the latter will be imported automatically.

Other battle settings, e.g. ground conditions, weather, dates and regions are meaningless when you intend to make maps for Quick Battles, as these will be assigned by the parameters of the Quick Battle played, overriding any settings previously set. Victory flags remain, however, as they were placed by the map designer.

## **Useful hints for map design**

Keep in mind that maps in CM are 3D. Use this feature to create visually appealing maps resembling the real world, and the players will thank you for it. Get lazy, for example by making completely flat maps or not paying attention to how a river flows or that hills in real life really aren't small lumps of dirt piled up on an area of 40x40



meters, and you will find your scenarios not played all too often. Think about the real world – rarely will you find completely flat areas, and gentle slopes, small ditches, elevated roads are everywhere. Paying attention to detail when making maps pays – in more visual appeal and more tactical options!

Light and medium bridges in CMBB span two elevation levels above the ground below, while heavy bridges span four elevation levels above. Keep this in mind when planning to add bridges to your map, it might save you a lot of re-working later on.

*Note: There is a hidden feature which allows you to place destroyed bridges and other buildings on the map, including factories and churches (which do not have their own terrain palette). Here's how it works: place a rubble tile on the desired spot (DON'T use "flat rubble"). Preview the map (important!). The "destroyed" tag is now fixed for that particular tile. Now go back to the map editor and place a bridge or building on top of the tile. Go into preview again – the bridge or building will now be shown as "destroyed".*

If you want to undo this, place an "open ground" tile on the spot, preview map, and the "damaged" tag will disappear.

It's a good idea to have rivers/ponds/lakes on lower elevations than surrounding terrain, as it looks more real and gives the map a certain visual depth. Also do not forget that rivers flow DOWN, so try to avoid having height differences in your rivers which would force it to flow down and up again...

Roads are just that – roads. Do not use roads terrain to simulate dirt paths or muddy tracks or driveways towards a house unless it is really wide enough to be considered a road. Open ground serves well to simulate these small paths, and a row of scattered trees within a forest can be used to simulate tracks which can be used by vehicles – albeit at some chance of bogging.

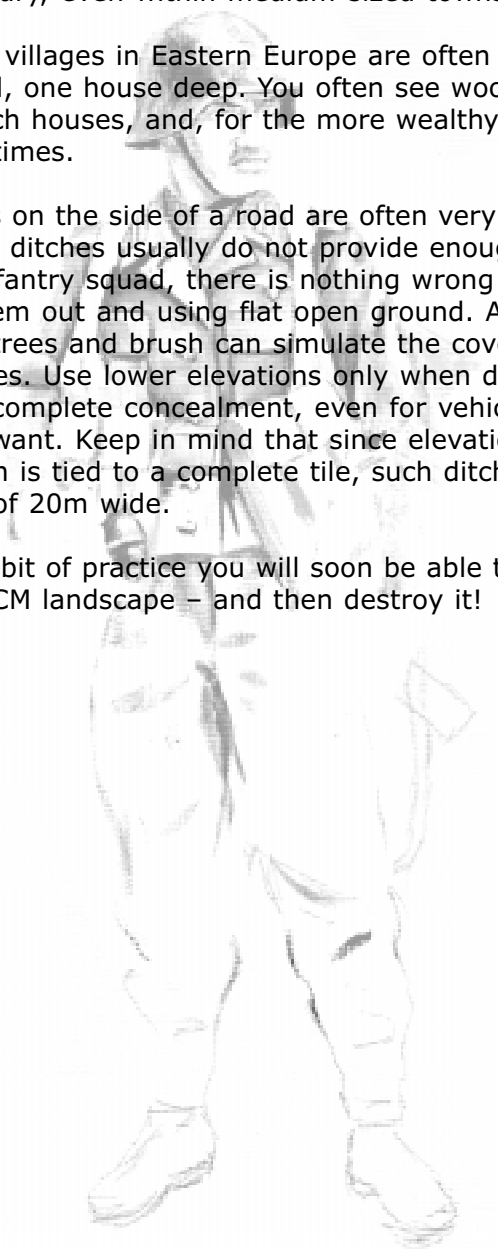
Paved roads are extremely rare in Eastern Europe in the mid-40s. In fact, in the countryside you will often only find dirt tracks which would even be better simulated by "open ground" than a "dirt road" in CMBB. Use paved roads for

major highways only, as well as in cities. Of course there's always the exception to the rule, but generally paved roads were a luxury, even within medium-sized towns.

Typical villages in Eastern Europe are often built along a single road, one house deep. You often see wooden fences around such houses, and, for the more wealthy, a stone wall sometimes.

Ditches on the side of a road are often very shallow. Since such ditches usually do not provide enough cover for a whole infantry squad, there is nothing wrong with simply leaving them out and using flat open ground. Alternatively, scattered trees and brush can simulate the cover gained by such ditches. Use lower elevations only when deep ditches providing complete concealment, even for vehicles, are what you want. Keep in mind that since elevation information is tied to a complete tile, such ditches will be a minimum of 20m wide.

With a bit of practice you will soon be able to admire your own CM landscape – and then destroy it!



## Units

The unit purchase screen allows you to select which forces will be fighting in your scenario. The same screen is also used to purchase units for Quick Battles (see THE CHALLENGE), though when making custom scenarios the restrictions usually applicable to Quick Battles are not in effect.

On top you see the Options bar. Here you can select:

**Army** – Axis or Allies

**Nation** – only those nations available during the timeframe and in the region you have selected in the parameters will be shown, other options are greyed out

**Division** – only those Division types available to a given nation are displayed here

**Experience** – sets the experience of the units or formations you want to purchase

**Fitness** – sets the fitness of the units or formations you want to purchase (not available for vehicles)

**Headcount** – by setting the headcount to anything else but “full” reduces the cost for a given unit or formation, but at the same time reduces the headcount of that unit by to the percentage set, representing casualties suffered in previous battles (not available for vehicles)

**Location** – Units can start “on map” or be set to enter as reinforcements. There are 30 reinforcement slots available. Each slot can be assigned different rules for activation. See REINFORCEMENTS below.

Below the options bar, you will see buttons with various unit categories: Infantry, Support, Vehicles, Armor, Artillery/Air, Fortifications. As you purchase units, the point totals corresponding with the types of troops you purchase will be updated here. On the right hand side, the total number of points you have spent is shown. These point numbers can work as an indication for the scenario designer if the battle or operation is balanced, but there are no limits on how many points you can spend in the Editor.

The two columns in the purchase screen show – on the left – the available units, based on the selections made in

the option screen, and – on the right – the already purchased units. When you move your mouse cursor over a unit in either column, some of its details are summarized at the left bottom of the screen. These details usually include headcount, main armament, a general classification for vehicles types based on their normal use (e.g. Assault Gun, Medium Tank), Armor thickness, Speed, Transport Class and so on. For formations, the composition of the formation is indicated, e.g. for a typical rifle platoon, this could be: 1x Platoon Headquarters, 3x Rifle Squad.



You can also delete and edit any units in the right hand column (already purchased) using the respective buttons at the bottom of the column (you can also edit a unit by double-clicking on it instead). Deleting the parent HQ of a formation will delete the entire formation. For editing units, see EDITING UNITS below.

Which units are available for purchase depends on the Parameter settings you have chosen, mainly the nations, the date, and the region. Ground conditions are important for ski troops, which can only be purchased when there is snow on the ground. Listing all the availability options

would be way beyond the scope of the manual, one could write a whole book about it, but here a quick overview:

Finland: Finns, Soviets, some German force types

North: Germans, Soviets

Center: Germans, Hungarians, Italians, Romanians, Soviets

South: Same as Center

*Example: The dates various forces are available, and which Forces within a Nation, are highly variable. For example, for most of 1943 the Hungarians have no Infantry (Force Type) units on the Eastern Front. With the exception of early and late war, the Hungarian Mountain and Cavalry units are not available. In Finland, only German Infantry, Mountain, and WG Mountain units are allowed. A handful of vehicles are also allowed. The Italians have a small presence in 1941, then a decent one for 1942. But after that, they aren't around.*

## Reinforcements

Units can start a game on map, or can be assigned to any of the 30 available reinforcement slots. When purchasing units, simply change the setting in the options bar under "Location". You don't have to use the reinforcement slots in numerical order, though it's easier to relocate what you created later on.

Each reinforcement slot can be assigned a set of rules for its activation. If the activation is triggered, all units in that reinforcement slot will be placed on the map. For both operations and battles, there is an option which specifies the "first possible arrival" of such reinforcements.

### ***First possible arrival***

For Battles, this number represents the first turn in which the units from that reinforcement slot can appear. For operations, the number represents the first BATTLE in which the units can enter, and they will do so during the setup phase.

### ***Chance***

This percentage gives the chance that the units will indeed enter on a given turn (or battle). The lowest

possible setting is 1%. If set to 100%, the units will always arrive on the turn of first possible arrival.

The chance remains the same for each subsequent turn. Example: a unit is set for a "first possible arrival" at turn 4 of a battle, with a chance of 30%. This means that it will NEVER arrive on turns 1-3. It has a 30% chance to arrive on turn 4. If it does not arrive on turn 4, it then has a 30% chance to arrive on turn 5, and so on.

### ***Reserves (operations only)***

For operations, reinforcements slots can also be assigned reserve status. Instead of scheduling a first possible arrival and a chance, you can simply assign the reinforcement slot to one of three reserve pools – Battalion, Regimental and Divisional reserves. When things start to go wrong and casualties mount, the Computer will release reserves to the player, starting with Battalion reserves (after light casualties), then Regimental reserves (after heavy casualties), then Divisional reserves (after very heavy casualties). Only one reinforcement slot will be released per battle. If more than one slot has been assigned to the same reserve pool (e.g. when you have two slots assigned to Battalion reserve), they will be released in subsequent battles in numerical order (first reinforcement slot 1, then 2 and so on).

You can also skip reserve pools, for example by assigning a divisional reserve only, but no battalion or regimental reserves. This means that the player will have to receive more casualties before first reinforcements appear, as divisional reserves are usually only released when things go terribly wrong.

### ***Link to map (advance and assault operations only)***

For advance and assault operations, there is also a third option for reinforcements – linked to map. When a reinforcement slot is assigned this status, a reinforcement flag will appear on the 3D map. It can be moved and placed just like victory flags in operations by left-clicking on it and issuing a PLACE order. When the battle map advances so that the reinforcement flag would appear on the map, the reinforcements are triggered and placed on map in the setup area of the player receiving them (they are NOT placed around the flag location). This is a great way to simulate defenses in depth, for example, as the

reinforcements for the defender will appear based on the attacker's speed of advance and not a rigid schedule.

### ***Fortifications as reinforcements***

In CMBB, it is possible to purchase fortifications like bunkers and minefields as reinforcements in both battles and operations. This is necessary to simulate the deep Soviet fortified defense systems, which stretched for miles into the rear. But use your discretion when assigning fortifications to reinforcement slots, as there are no security features built in to prevent "magical" appearance of a bunker close to the frontlines which wasn't there in previous battles or turns. The best way to use this feature is to link fortifications to the map during advance and assault type operations, and rarely, if ever, allow fortifications to enter the map as scheduled reinforcements or reserves.

### **Editing units**

Although certainly not mandatory, CMBB allows each individual unit to be customized to some extent. None of the changes allowed make fundamental changes to the unit's inherent qualities (for example, you can't give a Panther an 88mm gun, or a squad all light machineguns). But you can change various other unit abilities.

Select a unit from the right hand column of the purchase screen, and double click on it or click on the EDIT button at the bottom. This will open that unit's editing screen. In all screens, CANCEL negates any changes made and brings you back to the purchase screen, and OK accepts any changes and closes the window. Don't forget to save the scenario before exiting the Editor, though, for the changes to have any effect.

Depending on which unit type you want to edit, the editing screen might differ slightly. Three of the main examples are explained below.

## Infantry units

**Unit type** - The type of unit you are editing is always shown on the upper left.

**Ammunition** - Below the unit's name, you are able to edit the small arms ammunition available to that unit. Note that every unit has a maximum capacity for carrying ammo, which is also listed. Units rarely start off with their maximum capacity by default.



**Experience** - you can adjust the unit's experience rating. This is a great way to add individual elite and crack units to an otherwise regular formation.

**Fitness** - changes the fitness level for the unit.

**Standard Name/Special name** - the Standard Name for each unit is randomly assigned when you enter a battle. For historical scenarios, you might want to change this name to reflect a certain historical personality (in the case of a Rifle Squad, for example, a known squad leader). By clicking on the button, you will be able to enter a special name for the unit, which will be displayed every time the scenario is played.

**Suppression** - units usually start off without suppression, but can also enter the map panicked or even routed, to simulate pre-battle fatigue. Suppression pre-set here is subject to the normal rally rules.

**Fatigue** - similarly, units can enter a map tired or even exhausted, for example after a long forced march. Again, fatigue set here is subject to the normal recovery rules once in the game.

**Nr. Explosives** - infantry units can carry up to three explosive bundles. These are usually demolition charges for



pioneer and engineer units, and “grenade bundles” for other units. They pack a lot more punch than regular hand grenades and can be used to destroy minefields, or buildings, or to assault tanks.

**Nr. Antitank Weapons** – up to 4 anti-tank weapons can be assigned to an infantry unit. These will all be of the same type as set below.

**Type** – here you can determine which type of anti-tank weapon is being carried by the infantry unit. Only those options available for the timeframe of the scenario, the unit type and the nationality chosen are highlighted. Options include Rifle Grenades, various types of Panzerfaust, Panzerwurfmine, Magnetic Mines, Molotov Cocktails and RPG Antitank Grenades. These are explained in THE COMBAT.

## Infantry HQ units

Infantry HQ units can be edited pretty much like any infantry unit with two exceptions: Infantry HQ units (be it Platoon, Company or Battalion HQs) never carry explosives, and each HQ has a set of Leadership Abilities which can be edited here.

**Leadership abilities** – there are four, Command, Combat, Morale, and Stealth (explained in THE COMMAND), and possible values are 0, +1, and +2. You can add or subtract to each ability by clicking on the + and – buttons respectively.

Each HQ is assigned a random set of abilities when the unit is purchased. Usually, Platoon HQs get higher values for Stealth and Combat, while Battalion HQs get better Morale and Command. Company HQs are in the middle.

## Armored and support units

The editing screen for armoured and support units differs somewhat from the infantry editing screen. Below is shown the editing screen for a German Platoon leaders’ Tiger tank. For support units like Anti-tank Guns and mortars, the screen is similar, except that suppression and fatigue are additional editable options (and no leadership values are displayed.)

The main difference to the infantry edit screen is that ammunition values are split into the various available shell types for the given gun. In the case of the Tiger example below, the available ammunition is split into High Explosive Rounds, Armor Piercing Rounds and Smoke Rounds. The total for ALL shell types combined cannot be higher than the "max" number stated.

Also note that armoured HQs only have two Leadership values instead of the four associated with infantry HQs.

## **Tables of Organization and Equipment (TO&E)**

CMBB lets you purchase individual guns, vehicles and support units, as well as whole formations of infantry and armor. Armor can be purchased in platoons, which normally range from 2 to 5 vehicles, with one vehicle assigned as Platoon HQ. Infantry units can be purchased in Platoons, Companies and Battalions, all with their respective HQ units. The availability of the various formations and what they consist of has been painstakingly researched and includes a plethora of historical options.

Combat Mission is about as consistent as it can be with TO&E. Unfortunately, the number of nations, formations, length of the conflict, and the constant changes made to formations make it difficult to get things perfectly organized. To keep things as consistent to the user as possible, the following conventions were used to organize the TO&E:

1. The formation name is designed to give the player a lot of information very quickly and easily. Each title contains some or all of the following pieces of information in addition to its basic name (ex: Rifle Battalion, Infantry Company, etc.):

**Level** - Battalions are assumed to be attached to Regiments if they are standard fighting formations, Divisions if they are specialists such as Recon and Pioneers. Formations which are not Battalion size, or are not attached like this, have the appropriate notation made at the beginning (ex: Divisional Pioneer Company, Regimental Recon Platoon, etc.)

**Divisional Type** - In some circumstances standard formations were slightly different in one type of division than another within the same force type (i.e. Infantry, Mechanized, Cavalry, etc.) To reduce confusion, formations which appear in the same force type which are different for two or more division types are noted in " ( )". For example, (Pz) means only available for Panzer Divisions, (PzG) for Panzergrenadier Divisions, (Pz/PzG) for both types, etc.

**Introduction Year** - The year the formation was introduced is noted as '41, '42, '43, '44, or '45. If there were more than one formation during this time period, then a letter is used right after to differentiate between them (ex: '41A, '41B, '41C, etc.). Depending on circumstances these duplicate formations might be available at the same time or not. If there is no date at all that means the formation was the only one of that type in use for 3 or more years in a row.

**Incomplete/Complete** - Some formations, particularly Recon units, had great numbers of vehicles assigned to them. This is not something that Combat Mission is set up to handle, especially because these units often fought separate from each other by design.

If such units were left out there is a "-" at the very end denoting that some assigned units were purposefully not included.

If you see the "-" you can safely assume that some type of light wheeled or tracked armor would likely accompany this formation. Note that armored Halftracks and sometimes Armored Cars are included for the most part. Generally only company sized armored vehicle formations were left out.

In addition, some German Panzer Divisions were supposed to have a fully armored Battalion per Regiment. In reality generally only the "Elite" Panzer Divisions managed to acquire the assigned number of vehicles. The typical Battalions have a "-" mark denoting that only one Company out of three have halftracks. A "+" notes a Battalion fully outfitted with all its halftracks according to its TO&E.

2. In addition to the above conventions, Company-sized formations sometimes have their mode of transportation noted. In general it should be assumed that all formations move either by foot, horse, or with the assistance of minimal numbers of unarmored motor vehicles. Heavy Weapons Companies are assumed to be transported by motorized or armored transportation in Mechanized formations, horse and some vehicles for all others.

Company-sized formations which used armored vehicles for transport or support, usually halftracks, are noted as "(Armored)". Those companies which primarily used non armored vehicles for transportation are noted as "(Motorized)". Some formations used light 4x4s "(VW)" or motorcycles "(MC)" to move from battle to battle. In general these designations are in place to help avoid confusion because their TO&Es are generally different from each other.

*NOTE: Only armored support vehicles are included in the TO&E because non-armored transport were not intended to take part in combat. Also, Combat Mission purposefully does not include motorcycles to avoid players using swarms of them in a historically incorrect manner.*

3. Forces are grouped according to their basic classification. From top to bottom the TO&E covers Infantry, Recon, Pioneers, Misc.

4. Within each grouping units are organized with the most common units listed first. For example, standard Infantry Battalions appear over variations, like Light Infantry Battalions and Regimental Pioneer units appear before Divisional ones.

*"They call us the 6th Panzer Army because we have six tanks left." —*

*General Sepp Dietrich (War on the Eastern Front, the German Soldier in Russia 1941-1945, James Lucas, pg 41)*

## **The Challenge**

Combat Mission features one of the most advanced artificial intelligences found in wargames today. It's capable of handling any map, situation and task you ask from it, some better, some worse, but under almost all circumstances it will be a worthy opponent. With one difference, the AI doesn't learn – but you do. So over time we strongly encourage you to try out a game against another opponent, be it by email or the Internet. You will discover completely new sides to the tension and excitement of leading your troops into combat. Matching your tactical knowledge against another human is an incredibly rewarding and thrilling experience, and with the "Turn Timer" option for Internet-based games – adding time pressure to make snap decisions – your combat experience will be complete!

This chapter describes the various challenges the game can offer you, when playing alone or against another person.

## Artificial Intelligence

Combat Mission features essentially two levels of computer-player Artificial Intelligence, which we call – very loosely – Strategic AI (StratAI) and Operational AI (OpsAI). The former develops the battle plan against your forces when you play the computer in a single player game. It analyzes its own force and key locations on the map, places units for defense and decides the best approach to the objectives in the attack. The StratAI is not scripted, meaning that it can tackle any map layout and set of objectives. It is, of course, by no means perfect – even though it's probably the best out there – and will generally be at a disadvantage against an experienced human player, but almost always puts up a good fight.

The OpsAI, on the other hand, makes sure that the “orders” developed by the StratAI are executed properly. It adjusts waypoints and reacts to enemy threats, “reports” to the StratAI if an order is impossible to execute due to (for example) strong enemy resistance and so on. The interaction of these two levels of AI, mixed with a heavy dose of “fuzzy logic” decision making, ensures variety of play and even – to some extent – a human component even in single-player mode.

In addition, there is a third AI in the game, which not only leads computer controlled forces, but your own as well! When issuing orders, you have to keep in mind that your units are not robots. Being trained soldiers, they try their best to do what you tell them, but there are limitations. On certain occasions a unit might change your order a little or completely disregard it. The “Tactical Artificial Intelligence” (TacAI), which is responsible for this behavior, simulates the individual on the battlefield and takes into consideration what he thinks, sees and hears. It is, however, never proactive and acts only in self-preservation and self-defense!

Imagine a situation in which you order one of your units to fire at an enemy hidden in woods several hundred meters away, and all of a sudden another platoon appears on your flank, from behind a dip or a house merely 40 meters away. If your men dutifully carry out your orders for

the full 60-second Action Phase, the enemy will probably overrun your position before you - the player - get a chance to change your orders accordingly. Instead, the TacAI usually intercedes to simulate your soldiers taking it upon their own initiative to switch fire toward the suddenly far more threatening enemy unit. Imagine another situation where your lead tank runs into a mine! Would you want to see your other units, which were plotted to follow the lead vehicle, simply rumble forward into the same minefield? If your answer is no then you'll be happy, because the TacAI will change their orders and have them try to drive around the obstacle.

Not only does the employment of the TacAI result in a more rewarding and realistic gaming experience, it also serves to simulate the behavior of human beings on a lethal World War Two battlefield. The uncertainties of human behavior (stress, morale, panic, will to survive) are taken into account and simulated in the game.

The TacAI also uses "fuzzy logic" principles when determining the likely reactions of your units. This leads to a rich and varied set of possible unit behavior in different situations, and makes the units appear human in their actions. Some might run away when facing a new enemy close by, some might stand and fight or even charge. Although you might not always like the results, keep in mind that real world commanders often feel the same way! In other words, the TacAI is not programmed to be "perfect" since there is no such thing as perfection in war.

Only after the 60-second Action Phase has elapsed can you issue new orders to your units and redirect their actions, simulating tactical input from a squad or platoon commander to the individual soldiers.

*Crafts*

## Quick Battles

Quick Battle Scenarios are randomly generated battles following parameters set by the player. As the name Quick Battle implies, this is a great way to quickly generate battles in nearly endless variations and to get into the thick of things. Another advantage for 2 player matches is that these battles are not known to either player beforehand and can be quickly balanced to match the skills of the players.

Many options are available, which are discussed in detail below.

In order to start a Quick Battle, you need to choose "Quick Battle" from the list of available scenarios/battles. This option is always on top of the list.

**Date and Region** – the first screen lets you select the month and year of the battle, as well as the geographical region. These selections are important, as they determine the equipment and formations and terrain available to you. All three settings can be set to "random". You also have the option of choosing "All combined" for the region – this will allow you to select any troops from all the geographical regions.

### Battle parameters

The next screen allows you to set the main battle parameters, like the forces that will be fighting each other, but also victory conditions and more.

**Force Mix** – Six options are available. These determine the equipment that will be available to you. The options are:

**Combined Arms** – a balanced mix of infantry, mechanized and armored units, much like a typical Combat Group would look like during WWII.

**Infantry Only** – armoured vehicles are ruled out in this option

**Mechanized** – a mix of infantry and light vehicles, with a limited number of armored vehicles



**Armor** – all unit types are allowed, and you will be able to spend most of your purchase points on tanks and armored vehicles if you wish

**Unrestricted** – you can buy units in any mix you prefer

**Random** – the computer will randomly assign one of the above Force Mixes

**Nationality** – here you are able to choose which nations will be pitted against one another. The choices available depend on your settings of date and region.

**Division Type** – most forces in WWII were not mixed together willy-nilly, but usually belonged to a certain type of superior organization, like an Infantry Division, or an Armored Corps. By setting the Division Type, you determine what kind of equipment will be available to purchase, and in what quantities. A mechanized Division will be allowed to spend more points on purchasing tanks than an Infantry Division, for example.

You can also set this option to random, in which case the Division type will be selected by the computer.

The available options are -

### **Axis**

Infantry, Mechanized, Cavalry, Mountain, WG Infantry, WG Mechanized, WG Cavalry, WG Mountain, Security, Luftwaffe Infantry, Luftwaffe Mechanized, Airborne (Fallschirmjäger), Volkssturm and Ski.

### **Allies**

Infantry, Mechanized, Cavalry, Mountain, Airborne, Ski, Naval, Guards, Guards Mechanized

**Quality** - Low, Medium, High, Unrestricted or Random. Sets the available troop experience ratings. Low quality means that only conscripts or green units can be used. At medium, only green or regular units can be bought. At high, only veteran or crack units can be bought. Unrestricted means that you can purchase units of all experience ratings. Random randomly chooses one of the above.

*Note: Elite is not available for QBs at all, not even under the "unrestricted" option! Troops of this calibre were extremely rare, and in order to prevent unrealistic overuse of elite troops, their selection has been excluded.*

**Purchase Units** - Automatic or Allow Human.

Automatic has the computer select the combat units for that side while Allow Human allows the player to choose them.

**Fitness** - choices are Fit, Weakened, Unfit or Random.

**Casualties** - you can set a percentage from 0%-50%, or have the computer randomly assign a pre-battle casualty rate. Your units will be depleted randomly by the computer according to the percentage set here. This includes reducing headcount for squads and teams, but also eliminating certain equipment AFTER you purchase it. For example: if you have chosen a 50% casualty rating for your side, and purchase a platoon of 4 Panther tanks, chances are that only 2 will be available to you for the game. See also - Force Size below.

**Ammunition** - allows you to set how much ammunition your side has available. Options are 10% - 100%. Please note that setting your ammo too low can have a strong impact on play balance. That's why there is no random setting available here.

**Sewer Movement** - selects if either or both sides are able to use sewer movement or not.

**Battle Type** - Assault, Attack, Probe, or Meeting Engagement. This determines the force balancing (how many points the attacker gets relative to the defender), the map size, whether the defender may have fortifications, as well as victory flag placement. See The Mission for more details.

**Force Size** - 300-5000 points. These are the points given to the DEFENDER to purchase combat units. The attacker's points are calculated relative to this number according to the Battle Type selected above. For Meeting Engagements, both sides' points are equal.

Also, depending on the casualty settings for each side, this point total will be increased in proportion to the casualty percentage set (eg. if you play with 50% casualties, your point total will double. After you purchase your units, half of them will be deleted randomly, thereby reducing your points available for the battle to the number set in this option).

**Map Size** - Small, Medium, Large, or Huge. This is a relative setting. The actual map size (in meters) depends on the selected force size.

**Handicap** - This determines how many extra buying points (if any) are added to or subtracted from the attacking force, based on the Force Size selected above. It's great for balancing play between opponents of unequal skill levels.

**Rarity** - can be fixed, variable or turned off. All unit costs in the editor are rated for their performance, but also for how rare they were on the actual WWII battlefield. Fixed Rarity will always apply these rarity modifiers in the unit purchase screen. Variable rarity introduces a random element, by which a rare unit can occasionally become much more common, and therefore cheaper to purchase. Turning rarity off means that unit costs are not adjusted by their rarity at all and units are rated for performance only.

**Time** - Mid-Day, Dawn, Dusk, Night, or Random.

**Weather** - Clear, Overcast, Rain, fog, Rain&Fog, Thick Fog, Snow, Blizzard, Random

**Game Length** - 20-60 turns.

After setting the general preferences, the random map generator screen appears. It works exactly the same as the auto-generate map function in the scenario editor (see THE EDITOR/Maps), with one addition - for Quick Battles, it is possible to import custom-made maps.

## Importing Maps

A new feature in CMBB allows you to import any user-generated maps into Quick Battles. When prompted to determine which map you want to play on, you will see the usual map generator window as explained in THE EDITOR, but in addition a button appears on the right labeled "load from file". Clicking on that button opens a new window listing all available maps. The default directory opened is called "Quick Battle Maps", but you can browse your harddrive for any maps available, including those from other battles and even saved games! Maps from Operations cannot be imported, however.

*Note: you can, for example, import the "autosave" from a previously finished battle. All terrain features, including terrain damage like craters and destroyed buildings as well as foxholes will be imported, allowing you to essentially play a series of Quick Battles on the same map! Make sure you don't forget to set date, year and region (and possibly force types) accordingly, or you might find that the steppe map from 1941 you just fought on suddenly was teleported to Finland into the year 1945...*

After selecting the map, scenario or saved game you want, you will be asked if you want to import troops, also. These troops will be added to your force in addition to those you purchased for the Quick Battle, and they DO NOT count against your point total. When you import the forces from a saved game, troops will be imported in the state they were in when the game was saved. Note that these troops do NOT get resupplied, and a squad with LOW ammo will enter the new battle in exactly the same condition.

One word of caution, however – there are no safety features built in for importing maps. Make sure that the map you're importing fits the size of the Quick Battle you are generating. Importing a 400x400m map for a 6000 points Assault is not a wise thing to do. Likewise, importing troops from a 6000 points assault scenario to play a meeting engagement with 500 additional points purchased can seriously unbalance the game. Note also that setup zones and victory flags remain in their default position as placed by the map designer, and may not fit the type of battle you want to play. The troop orientation in Quick Battles is ALWAYS east/west with the Allies starting at the

east map edge and the Axis on the west. Use your own discretion!

## Choose type of game

Finally, choose which side you want to play and if you want to start a single player game, a PBEM game, a hotseat game or a game over the Internet via TCP/IP (all explained in The Challenge).

When you have chosen to have the computer automatically purchase forces for you, you will find yourself immediately in the setup phase of the battle. Otherwise, you will enter the UNIT PURCHASE screen.

## Purchasing units in Quick Battles

The unit purchase screen for Quick Battles is the same one used to make custom-made scenarios in THE EDITOR, but there are some differences, explained below. For a more detailed description of how the screen works overall, see THE EDITOR.

Depending on the parameters you have set for the Quick Battle, some options in the unit purchase screen will be greyed out. For example, when you set Fitness to "Fit" in the Parameters, only this option will be available in the unit purchase screen. When you have used random settings in the parameters, for example for force mix or nationalities, make sure you check out all your available options in the purchase screen. The "Location" option is always set to "On Map", as no reinforcements can be purchased for Quick Battles.

Under the options bar, you will notice how many points you are able to spend for the Quick Battle. On the right hand side, the total number of points you can use to purchase your troops is displayed. This can be different from the number you set in the parameters, depending on the chosen casualty level and battle type.

*Note: when casualties have been set to 50%, you are allowed to spend twice as many points as will enter the battlefield, because half of your force will be randomly "eliminated" before*

*the setup phase. See the previous section about Battle Parameters.*

Also, depending on the battle type, each side will often be able to spend a different point total - except for meeting engagements, where both opponents normally get the same number of points - the attacker in a Quick Battle usually gets more points than the defender. A Probe yields the least point advantage, an Assault the most. Of course this is modified by any "Handicap" settings.

The total is broken down into various categories of unit types which you are allowed to purchase - Infantry, Support, Vehicles, Armor, Artillery/Air and Fortifications. How many points are available for each category depends, again, on the parameter settings for your Quick Battle, including force mix, division type, region and battle type.

By clicking on each category, the available unit list appears in the purchase screen. The cost for each unit or formation is listed, as well as the "rarity adjustment" (if applicable).

*Note: many formations listed under "Infantry" actually consist of a mix of infantry and support units (and sometimes vehicles), so the cost listed is not always directly deductible from the Infantry point allowance. Example: A Grenadier Battalion '43 might cost approx. 1150 points combined, but it consists of about 740 points of infantry units, about 270 points of support units (Heavy Machineguns mostly) and about 140 points of artillery units (forward observers).*

Before purchasing any units, make sure you adjust the options in the top options bar. For example, often you will be able to choose from units with different experience, e.g. green or regular troops, and you should set the option to reflect which ones you want to buy before actually selecting that formation.

Purchased units appear in the righthand column of the purchase screen. You can delete any units from this area if you change your mind. When you spend more points than you are allowed for a category or overall, the corresponding point value will turn red and you will be reminded that you exceeded your point total when you try to exit the

purchase screen. How many points you spent is shown in the "Spent" line directly below the options bar.

*Note: it is possible that even though you are allowed to spend points for a certain category (for example armor or vehicles), no units will actually be listed in the purchase screen. This is not a bug, but indicates that the particular force mix, nationality and division type for the set date and region excludes the use of that category of units for this battle. This is often the case for Partisans and minor nations like Hungarians and Romanians, which often did not have armor or vehicle support.*



## PBEM

Playing by Email (PBEM) can be an extraordinary gaming experience. Matching your tactical skills directly against those of another human opponent, regardless of where he is in the world, will bring your enjoyment of Combat Mission to new heights.

But in order to start and complete a PBEM game successfully, a little bit of organization can help. Without it, PBEM-ing can quickly become frustrating: whose turn is it? Where is the last file? Did I plot my last turn already? Did the last PBEM file get overwritten?

PBEM games play just like single player games against the AI, except that each time you finish a game turn, you will need to send this information to your opponent.

After you click GO!, Combat Mission generates a text file, which contains the encrypted turn data that needs to be emailed to your opponent. You will be asked to name the file, which then will be saved into the PBEM directory within the CM folder. The default name is "PBEM", but you can change it to anything you like.

When renaming PBEM files, it makes sense to use a short description of what that file is, as it will allow you to track down quickly what game and which turn it is. The moment you start playing more than one PBEM game at once (don't worry, it WILL happen!), you'll learn to appreciate the correct naming of your files. There are many ways to do this. You can simply number the files in sequence, starting with "Stalingrad 1" – this is the easiest way to find a file. If you also want to know exactly what the file contains, you could also label it "Stalingrad Turn 15 Soviet", or "Steve Setup Germans". Use whichever file names work best for you. Remember that files with the same name will be overwritten – that's why it makes sense to name them after the scenario name or even your opponent's name. It is also good if you agree beforehand with your opponent on which numbering system you want to use.



Additional to the above “manual” way to organize things, there is a number of “PBEM organizing” programs out there, which – though not officially supported by Battlefront – do work with Combat Mission and make the re-labeling and organization work easy for you. Check our forums at [www.battlefront.com](http://www.battlefront.com) and certainly someone will be able to help you out in finding such software.

## Compatibility

It is very important that both players use the same, compatible method for sending PBEM files to each other. If one player can't load a file it is most likely because of a transmission error due to an incompatible email format. Macintosh users playing against Windows users should pay close attention to that! Generally it is best if “uuEncoding” is used without any form of compression. If you should use compression, make absolutely sure that it can be decoded on the other end.

## PBEM Turn Sequence

The turn sequence in PBEM games is designed to allow for a reasonably fast game, but at the same time provide security and prevent cheating. One of the weakest points in the PBEM chain of some games is that a player can open the file sent to him by his opponent as often as he likes, plotting new orders for his units until he achieves the results he wants. This is not possible with CMBB, since the PBEM turn sequence prevents the player from watching the results of his orders before sending the file to his opponent.

The PBEM sequence goes like this:

1. Player A starts a scenario and chooses the side he wants to play. He chooses a password and enters the game during the Setup Phase and positions his units. After hitting GO!, the PBEM file is generated. He emails this file to Player B.
2. Player B opens the file, chooses a password for himself, and enters the game during the Setup Phase. After positioning his units and hitting GO!, the PBEM file is generated, which he sends to Player A.

3. Player A opens the file, plots his turn one orders and hits GO!. He sends the file to Player B.

4. Player B opens the file and plots his orders for turn one. He does not watch the Action Phase yet – he has to email the file to Player A first.

5. Player A watches the Action Phase, and sends a file back to Player B.

6. Player B watches the Action Phase, after that he plots his turn 2 orders.

7. Player A plots his turn 2 orders.

8. Player B watches turn 2 Action Phase.

9. Player A watches turn 2 Action Phase and plots turn 3 orders.

10. Player B plots turn 3 orders.

11. Player A watches turn 3 Action Phase.

12. Player B watches turn 3 Action Phase and plots turn 4 orders.

Steps 7-12 repeat until the game ends.

## TCP/IP

### Minimum TCP/IP Requirements

To play using a the Internet or a LAN you need two players both using the same version of Combat Mission Barbarossa to Berlin, on either a Mac or Windows based machine. An active connection to the Internet or a TCP/IP based LAN is also a requirement. You might need special networking software for LAN games played between Macintosh and Windows based systems.

### Basic Concepts

One player is designated as the Host and the other as the Guest. The Host is responsible for picking the Scenario or Operation and selecting any applicable parameters for a Quick Battle. Combat Mission picks the faster computer to process turns on, so the Host need not be the person with the best machine for optimal game performance.

### Starting a Game

The Host starts up an Operation, Battle, or Quick Battle in the normal way (see Getting Started section). Once the game is loaded the Host selects the side to play, and then is presented with the connection choice screen (see previous page). Click on the TCP/IP option and select a turn time limit if desired. After this is done, click on OK, enter a password, and click OK again.

*Note: The optional turn time limit governs both Action and Orders Phases combined, however the Setup time is twice the amount of the timer setting. Keep in mind how big the battle is and the amount of time pressure the players both want to have. Quick turn times for large battles are probably not a good idea.*

The next screen you see is the Host Connection Page. This lists all of the Host's Current IP addresses, one of which the Guest needs in order to connect to the game (see IP Address Tips later in this section). The Host must wait until the Guest connects, at which point the game proceeds almost like a single player game in terms of the game mechanics.

*Important: do not minimize the game while waiting for the guest to connect. The guest needs to load in the 3D graphics during his attempt to connect, and this cannot be done properly when CM is minimized in the background.*

## Joining a Game

All the Guest needs to do is start up Combat Mission, click on the Join Multiplayer button, then select Join Network Game. At this point a screen appears asking for the Host's IP address. This number must come from the Host at the time the game is set up. Once the IP address is entered a connection with the Host should be established almost immediately and the game will start downloading the scenario data so that the game can begin.

*Note: Unlike many multi-player games, a scenario file only needs to be present on the Host's system for a game to play correctly.*

## Turn Timer

One of the unique features of TCP/IP play is the optional Turn Timer, which is set by the Host before the Guest joins the game. Each player has twice as much time as the Turn Timer's setting in order to set up units in the Setup Phase. For example, a setting of 2 minutes allows 4 minutes for setup. Once the game begins the selected time is shared between the Action Playback Phase and the Orders Phase. This means you have only one block of time to view the action from last turn and issue orders for next turn.

Each player has one "free" viewing of the Action Playback (i.e. 60 seconds). After this "free" 60 seconds the timer automatically starts counting down. Multiple reviews of a movie quickly eat into the total amount of time you have to give orders. The timer switches to a warning color (red) as it gets close to zero.

*Note: If the player clicks on "Done" right away, and stops viewing the playback, the timer starts counting down. In other words, the "free" 60 seconds can only be used for watching the playback, not for issuing orders.*

The timer continues regardless of what the player is doing, like switching Combat Mission to the background to check email. If a player needs to take a break for any reason a Pause request can be made. This is accomplished by pressing the Alt (or Command on the Macintosh) and P keys at the same time. This flashes a message on both player's screens requesting the Timer be temporarily disabled. The other player now has the option of accepting by requesting a Pause also, or denying this request by doing nothing. When both players request a Pause a message pops up indicating that the Timer is disabled for the rest of that turn. Both players can now take as long as needed to complete the turn. When both players have clicked on the "OK!" button (or "Done!" if in the Action Playback Phase) the game proceeds with the time re-enabled. If a Pause is issued during an Action Playback Phase the timer remains disabled until the next full turn.

## Multiplayer Chat

Each player can send a text "chat" message to the other. To activate the Chat feature, press the "`" (tilde) key or the number "0" (zero) key. Users with non-US standard keyboards most likely can only use the "0" key. You can now type in your message and press the "Enter" key to send it. If a message is no longer necessary, but the entry box is already presented, simply press the "Enter" key with no text typed in. Messages are displayed in the upper right corner of the screen and new ones are announced by an audio "squawking" sound on the receiving player's system.

*Note: As soon as a Guest join a game the players can begin chatting. At this point it is a good idea for the Guest to send a brief message to indicate to the Host that the connection is indeed established.*

Chat messages can not be viewed when in the 2D part of the game. This means while you are in a Briefing screen you can not read or responded to messages. However, the audio "squawking" sound can be heard to indicate the other player is trying to make contact.

At the end of a game, when the After Action Report is displayed with the scores and indication of the winning

player, should you wish to chat further with your opponent, just click the "Look at Map" button which will return you to the 3D battlefield. From there you can use the chat feature as before to continue your conversation, and perhaps gloat about your glorious victory.

## **Special Note for Operations**

Operations proceed just like normal single battle except that at the completion of one battle you are shown the current Operation Debrief Screen. Remember that you cannot chat when viewing this screen. As soon as both players click OK the next battle will commence to load and the setup phase will begin.

## **IP Address Tips**

When a player Hosts a game, Combat Mission lists ALL the IP addresses assigned to a system. If you have multiple modems or network cards it will list all IP addresses associated with those devices. What it can't do is tell you which one is the correct IP address as it depends on how your system is configured. Users of AOL, for instance, may have up to three addresses listed. You will need to have your opponent try to use each IP address in order until they find the one that allows connections. Once you have found the correct IP address, make note of its place in the list since it should always be the same one. For example, let's say when you host a game Combat Mission shows three separate IP addresses. You give the first one to your opponent and it doesn't work but the second one makes a connection. In the future, the correct IP address should always be the second one in the list even though the address itself may change.

If you need more help with IP addresses, please see Appendix C - Troubleshooting.

## **Lost Connections**

If at some point during play the connection is lost (not uncommon for even "stable" Internet connections) both players receive messages indicating that the connection is now broken and the game must be restarted by loading the autosave. The autosave file is created on each players'

system when the game detects the players are no longer connected. It does not matter which player reloads the autosave, and thereby acts as Host, but depending on the timing of the disconnect some orders may need to be reissued. Autosaves created due to a broken connection during the Action Playback do not allow either player to issue any orders. This is done to prevent one player from purposefully breaking a connection during a turn that is going badly in order to "redo" orders.

## **Internet Connection Sharing**

If you are using Internet Connection Sharing, and your machine is not the one that connects to the net, then you can't be the host. eg. if you are on a local area network (LAN) and you connect to the Internet over the LAN via a server, then you can only Join - though your server could Host an Internet game. If you don't know what Internet Connection Sharing is, then you probably don't have to worry about this.

## **Firewalls and Proxies**

In order to play a network game, Combat Mission requires that TCP port 7023 be open for all outgoing and incoming transmissions. Please check the documentation for your firewall or proxy software on the correct procedure to activate access to that port.

## **Cable/DSL Router Configuration**

If you use a home broadband router (eg. LinkSys Cable/DSL 4 port Router) and wish to host a network game you will need to add TCP port 7023 to the routers forwarding table. You then need to match port 7023 to the internal IP address of the computer that you wish to host the network game. You can then use the router control panel (usually accessed via your web browser) to get the external IP address given out by your ISP. Give this external IP address to your opponent and they should be able to connect with you hosting. Consult your routers documentation for more information on proper port forwarding procedures.

# ***The Beginner's Tutorial***

This tutorial is designed as an introduction to Combat Mission: Barbarossa to Berlin for those with no familiarity with Combat Mission at all. In this brief section, you will learn how to operate the user interface and some of the basic commands. For more advanced players, or after you complete this tutorial, please see the CMBB ADVANCED TUTORIAL.

## **Getting Started**

The first thing you see when you start up Combat Mission: Barbarossa to Berlin is the main game screen. It contains several buttons, but you can ignore most of them and left-click on the PLAY GAME button. On the subsequent LOAD GAME screen, select the "The Iron Roadblock Tutorial" scenario (it should be the first in the list) and click on the PLAY SCENARIO button.

Next up is the general briefing, telling you some overall information about the battle you are about to play. The general briefings in the game are intended to give the player a feel for what to expect, without giving too much away, so that "fog of war" can be preserved.

After reading the briefing, if necessary scrolling using the arrows at right, click on DONE.

Now select the side you want to play. For this tutorial, please select ALLIES. In the tutorial scenario, this means that you will command a Soviet task force. Other possible Allied nations in CMBB include Partisans, Romanians or Poles. Change the COMPUTER PLAYER SETUP to STICK TO SCENARIO DEFAULTS. Leave all other settings at the defaults.

The next choice you need to make is how you want to play the game. The available options are 1 PLAYER, HOTSEAT, PBEM and TCP/IP. You want to left-click on SINGLE PLAYER and then OK for now, meaning that you



will play one side and the computer player ("artificial intelligence" - AI) will control the enemy.

You will now see the detailed briefing for the Allied side. Read carefully- it will tell you what your mission is, what forces you have to accomplish it, if you can expect any reinforcements and any intelligence on the enemy dispositions. Keep in mind that all of the information might not be true; the scenario designer might choose to tell you a half-truth or an outright lie. There is no need to take notes on the briefings- they can be accessed by the ALT-B hotkey or simply pressing the BRIEFING button on the main interface during the game.

The tutorial scenario is an Axis probe, meaning you, the Allied player control the on map victory locations but have not occupied your line long enough to dig in or build fortifications. Combat Mission offers many more mission types ranging from determined assaults to meeting engagements. See THE MISSION for more details.

When you've finished reading, click on DONE.

## **Discovering the Battlefield**

Congratulations, you made it onto the 3D battlefield of Combat Mission! On this rendered terrain, battles will be won and lost, sacrifices made and heroics performed. Note that you can generate any real or imagined field you would like using the powerful SCENARIO EDITOR, but for now lets just concentrate on this one square kilometer piece of virtual reality.

The game begins in the SETUP PHASE, where you can scout the map, make your plan and deploy your forces in an effort to crush your opponent.

Take a look at the overall screen layout, which is divided into two main sections. The upper three-quarters are occupied by the 3d battlefield window, while the bottom quarter is covered with the game's interface. Throughout the game, this interface will feed you vital information about the status of the battle, your forces and the virtual world you are fighting in. Lets take a walk through it to see what's what.

To begin our tour of the interface, please left-click on an open area of the map. In the top left hand corner, you will see a German cross and a Soviet star with some arrows on it. This indicates the type of battle, in this case an Axis Probe. Below that you will see several percentage values, these are the Victory Level and Global Morale. Beware, the Victory Level displayed is merely an estimate, based upon what you know as the commander about flags held and losses inflicted. You will only discover the true value after the battle is over. The Global Morale is a function of the casualties you have taken and directly influences the willingness of your troops to fight rather than run away. Also beware that, should it get too low your side will automatically offer a cease-fire or even surrender.

Moving to the right, you will next see a landscape thumbnail. This serves to indicate the weather and ground conditions effecting this battle. Holding the mouse over it will switch the graphic to text indicating the specific conditions. Vehicles and men move better, faster (with lower chances of bogging) and accrue less fatigue in dry ground conditions. Strong winds will whip flames into raging infernos quickly, and fires tend to spread with the wind direction. Next to this you will see dialog boxes—indicating the date, time of day and current turn. Below it you will see the scenario title.

To the left of this display rest a series of buttons. Most of them are quite self-explanatory, but do note that if you choose to Prepare For a Ceasefire, that button will stay depressed. Possibly the most important button on this interface is the one labeled HOTKEYS. Left-click on it, and you will see a list of all the hotkeys available within the game interface. This list is also available at the end of this manual, complete with descriptions of the in-game effects of these commands. For now, let us explore a few of the key effects. You might have noticed your men seem a bit large; hitting SHIFT-C will cycle through the graphical scale, ranging from realistic to +4. Note that changing the scale has no effect on in-game physics, it just serves to make things easier to see. SHIFT-T will cycle through the tree display density settings. You might find NONE useful for issuing orders to units in forests, while you might like EXTREME for movie watching. If you are running on a

slower machine, lowering the tree display density or the terrain effects density (SHIFT-N) will help to smooth out the game's animation.

On the right hand side of the interface you will find the viewpoint navigation buttons, which move your viewpoint around the map.

The battlefield map of Combat Mission is three-dimensional, and you can move your viewpoint (the "camera") in any direction, even up and down. There are several ways to navigate on the battlefield, but one of the easiest is by using the arrow buttons on the main game interface. Another very valid way of moving and rotating the camera is to push the mouse cursor off of the screen edge. Pushing it all the way to the top, for example, will move the viewpoint forward. To the sides, pushing it off the upper parts of the battle window rotate the view point, while the lower parts will scroll the view sideways. For other viewpoint navigation methods (like how to zoom or adjust the camera angle up and down) read THE INTERFACE section of the game manual.

Try moving around the map now. Make sure to try out the different view levels, from the strategic view (level 9) all the way down to the trench cam at ground level (level 1). You can use the UP and DOWN buttons on the main game interface, the 1 through 9 keys on your keyboard or the + and - keys on your keypad. While the higher view levels are good to get an overview of the map and a feel for the battle in progress, the lower views are excellent for close-up action playbacks and fine plotting of moves, lines of sight etc.

## **Identifying Your Mission**

In order to orient yourself on the battlefield, rotate the camera until you spot a black windrose with a big N above it slightly beyond the edge of the map. This will help orient you to both the wind and cardinal directions quickly and easily.

Lets have a look at the map. You will see a road leading from the southwest and exiting towards the northeast, with a flag near the northeast corner. Your mission in this

scenario is to maintain control of the flag, currently the Soviet flag, in that northeast corner. The Germans will be coming down the highway from the opposite corner of the map, as stated in the briefing.

In most other tactical wargames one gained (and maintained) control of victory locations by placing a unit directly on top of it, but this does not apply to Combat Mission. Due to the realistic 3d nature of the game, Combat Mission requires the player to gain control of the area surrounding the flag. Furthermore, in order to maintain control of that flag you must keep units nearby—when your troops leave the area, who knows what else could walk in? When your troops no longer securely hold an objective area, the victory flag will turn gray and have large '?' on it. Keep in mind that on unscouted parts of the map you might well see neutral flags even though they are under the control of unspotted enemies. In addition, remember that due to fog of war what you see is not necessarily what you get; i.e.-hidden enemy units might be exerting control over flags you believed to be yours alone. A critical item to remember is that you only gain victory points for the victory flags under your control at the end of the game.

Move toward the southeast corner of the map now. Here you will see two sets of dotted colored lines (one red and one blue) surrounding rectangular areas. These are your Setup Zones. Setup Zones define the area in which you may freely move troops that are located within them during the setup turn. This allows you to configure your units in such a way that they may best be able to execute your orders. While the number of setup zones for each side is not limited (you could have, for example, ten red setup zones or more), there are only three distinct colors for each side.

Although there are none in this scenario, you may also find some of your units that are located outside of the defined setup zones. These units are recognizable by an orange base color and are termed "padlocked" units, meaning that you cannot move them around or place them in different locations during your setup turn. Other units can also be set up outside of such zones in the "neutral" area (to simulate advance elements for example). Such

units have a grey zone color and can be left as is or placed in any of the setup zones. When you get used to the color coding of the unit bases in this game you will be able to determine at a glance which units are capable of being moved around in the setup turn.

## **Becoming Familiar with Your Units**

When you left-click on one of your units, a yellow frame will surround it on the 3d Battlefield. At the same time, the game interface will transform into a unit status window. In that status window, you can see the name and type of the unit, weapons, armor, manpower and experience. Once the game is underway, casualties, morale, current activity and suppression status will also be displayed here. For more details on this window, please see THE INTERFACE.

Striking enter will cause a more detailed unit status display to appear. In this pop-up, you can see all manner of technical information about the unit including characteristics such as armor penetration, horsepower and firepower. See THE MEN AND MACHINES for details.

## **Learning How to Issue Orders**

Find the KV-1 tank sitting in the field overwatching the road and select it by left clicking on it. With a unit selected you can now access its orders menu. Hit the SPACE BAR, or just right-click on a unit to bring up the orders menu.

Since you are still in the Setup Phase, the order menu contains only a few orders, used mainly to redeploy your units within their setup zones. When the game starts, additional orders for targeting, different modes of moving, etc., will become available.

Besides each order, you will notice a letter. This is the hotkey command, which you can use to issue an order without having to call up the order menu.

All right, let's move around a few of the units. Select the PLACE order for the KV-1 tank you have chosen by right-clicking on the unit in order to bring up the order menu, or alternatively by pressing the P key. You will notice a blue line extending from the selected unit towards

the mouse cursor. This line will follow your cursor wherever you move it. Point the cursor anywhere within the blue setup zone and left-click. The KV-1 will jump to the new location. Now hit P again and move it back to where you found it.

There are restrictions as to where you are allowed to place your units. Tanks, for example, cannot enter woods or buildings or even steep slopes (CM is 3-dimensional after all). As previously stated, you are also not allowed to move your units out of their setup zones. Try it - select the KV-1 and, press P and move the cursor into the blue zone, then left-click. Nothing will happen - the KV-1 cannot leave its own setup zone.

You can also change the facing of your units (your units will spot an enemy best in the direction they face!). This is done with the ROTATE command. Bring up the orders menu or hit O, move the cursor to the direction you want your unit to face and left-click. If you want to reposition a unit and change facing at the same time, use the MOVE command, hotkey M. This will first place the unit and then automatically call up the ROTATE command afterwards. You might want to rotate the KV-1 so that it faces the red and black bull's-eye on the road. It is what is known as a Target Reference Point (TRP), when the battle starts your tank will be boresighted, giving it a much better chance of hitting its target. Boresighting is an option given to a defender with a Target Reference Point that assumes the defender will have had ample time to precisely calculate the range (and other factors affecting gun accuracy) to the area of the TRP.

Notice also that the line color is different for each command you choose. An in-depth description of available commands, line colors and their effect in the game can be found in THE COMBAT.

## **The All Important Line Of Sight (LOS)**

Another command available during the Setup Phase (and also thereafter) is LINE OF SIGHT. This is a very useful tool to check exactly what your units are able to see from their current positions. Try it - select a unit, hit L (or

right-click on a unit to call up the orders menu and left-click on LINE OF SIGHT). Now move the cursor around the map - you will notice that the color of the line changes, depending on what you point at. You don't need to click, just pointing the cursor does the job (in fact, when you click you exit the LOS tool). Notice also that some text appears above your cursor describing the type of terrain you're pointing at right now.

The brighter the blue line color, the better the line of sight, i.e. the less obstructed the view to that particular location. Notice that line of sight deteriorates with distance, even across open terrain. Additionally, some objects, like houses, completely block the LOS, while others, like woods, simply make it deteriorate faster. With the LOS tool selected, move the cursor slowly into the light woods off the road. The further the cursor moves, the darker the LOS line becomes.

At some point, the LOS becomes blocked. Your unit is not able to see any further - immediately, the LOS line color changes to red/black. The red part of the line shows what is still visible, the black part starts from the point where the LOS is cut, and nothing beyond that can be seen.

Lines of sight are extremely important in tactical combat - you need to see the enemy before you can fire at him. At the same time, you are trying to deny him lines of sight to your own troops, thereby effectively keeping him from firing at you. Mastering the concept of line of sight in this game is essential to your success as a battlefield commander. You won't always have to use the LOS tool. Being 3D in nature, and with the free camera movement, most often you can "eyeball" what your units can see. One of the best is to simply select "ground view" (level 1) and position the camera on top of the spotting unit. Keep in mind, however, that with the option to scale unit sizes and the generalization of individual trees and soldiers, "eyeballing" will never be as exact as the LOS tool. If in doubt, hit the L key - keep this in mind, it can save you from some frustrating defeats later.

## **Getting Your Units Ready for Battle**

Now it's time to apply all of the above and concentrate on the mission at hand. You have one KV-1 tank, an infantry platoon, an anti-tank rifle, a machine gun and a tank hunter team. The goal is to prevent the Germans from coming down the road, and the forces are already deployed to handle it.

We are going to leave the KV sitting where it was at the beginning of the scenario, blasting the German units as they emerge from the forest. At the same time, we are going to use the infantry and support as a backstop, in case anything manages to get by the KV.

Since everything is in place already, we are going to just hit the GO switch at the right end of the game interface.

## **The Orders Phase, First Turn**

After hitting GO, the computer player will take a few seconds to position its own units and then the order phase for the first turn begins. You'll notice that the setup zones disappear (they have no further meaning for the game) and your units are awaiting your orders for the first minute of action.

Methodically, we're going to issue the first round of orders to your units, based on the previous tactical considerations. Without any unit selected (you should see the main game interface at the bottom of the screen), hit the + key. This selects the next available unit, based on its ID Tag. Since you had no unit selected, that will be the first unit for the Soviets. In this case, it will be your 12.7mm HMG team.

Now press the TAB key (to lock the camera view behind the selected unit) and press 2 to choose view level 2. You should now see your HMG standing guard in the forest. If all you see is a tree with a yellow box in it, try using SHIFT-T to reduce the coverage until you can see your unit. Using the + and - keys is a quick way to find your units on the map and allows you to jump from wherever you are right to the exact location of the selected unit. It's



up to you which view level you choose, of course, but right now you are going to want to zoom out to view level 4.

Now, your HMG can fire all the way across to the far treeline, but is not too effective beyond 500m or so. You are going to want to tell the unit to hold its fire unit until the enemy gets close. To do this in *Combat Mission: Barbarossa to Berlin*, you need to place a Covered Arc. Press C or use the orders menu to issue the command. You will now place the two arms of the arc, first by stretching the arm down the the treeline to the right and then left-clicking when you reach 350m or so, then stretching the arc back across the field to the lefthand treeline. An orange arc, centered on the HMG, will remain after you are done. This very important command tells units which way to look for targets, and what ranges they are permitted to fire from. Be careful using it - units with a covered arc will sometimes ignore or possibly not even see threats from other directions.

Hit the + key again, bringing you to the anti-tank rifle. Like the HMG, he too can fire at long range, but is not really effective. Give him a similar covered arc to your HMG. Note that if you want to look at all the cover arcs, instead of just the selected unit's, use the SHIFT-X hotkey to toggle covered arcs visibility settings.

After the arc is set, hit + twice to select the KV-1 tank. It should be covering the road coming from the German-controlled woods. Because there is that Target Reference Point 1000m away, you want the tank focusing on that point. However, since he is your main Anti-Tank asset, you want him concentrating on armor. You probably cannot see the area near the TRP clearly, so jump the camera over to the TRP location by holding down CONTROL and left-click. Then hit V or choose COVER ARMOR from the orders menu and place a blue armored covered arc over the TRP. There might be a unit or two in sight, if so hit the T key or choose TARGET to aim for them. If they say BORESIGHTED underneath, you might want to click to go ahead and target them. If not, just hit spacebar to cancel out of targeting mode. Note that if you target something within your cover arc, it remains active, but if you target something outside of the arc it will disappear. And if you mistakenly target a

unit, just hit X to clear or choose cancel from the orders menu.

With the tank all squared away, hit +. The next unit you will come to is the HQ for your Rifle Platoon. We are going to move this HQ up near the flag, to give the position some backbone. But first, let us talk a little about HQs and their role. When you look at the screen, you'll notice a few red-brown lines (and one black line) extending from the HQ unit to the surrounding troops. These are command lines and indicate if the subordinate units are in command or not. A brown line indicates IN COMMAND, a black line shows OUT OF COMMAND. There is also a small red or green light in the Unit Status window indicates command status. Red is out of command, while green is in command.

Keeping units in command is important as it confers many benefits to your troops. The most important one is that units in command suffer from shorter "command delay" than units out of command. The command delay simulates the time it takes for orders to pass from higher HQs down to the fighting elements. If out of command, units can remain in place, delayed, for 20 seconds or more.

HQ units also serve to give certain leadership bonuses on their troops, indicated by the command, morale, stealth and combat icons visible beneath the portrait in the unit status window. These bonuses and all the other ins and outs of command and control are explained in detail in THE LEADERSHIP section of the manual.

This infantry needs to get into position to backstop our defense. First, double click on the HQ unit; the entire platoon will be selected. Now strike M or choose MOVE from the orders menu and move the mass towards the victory flag (West), but just short of the road by selecting a point short of the road and left clicking. All the squads will mimic the movement of the HQ. You might not see them, if so, hit SHIFT-P until they appear. But you did not want to move everyone in concert—hit backspace to delete the order. You could also select units by clicking and dragging a box around them. For example, hold down the left mouse button and drag to create a box around several units, then release. Any unit inside that perimeter will have been

selected. Click on an empty area of the map to unselect any units.

Now it is time to actually move the squads into position. Click on any one of them, and MOVE them west, as directed above, towards the road. Left-click just short of it, you will see a square endpoint marker appear. Now it is time to rush across the road—it might be under German observation and machine gun fire. To do so, right-click on the unit and select ADVANCE or just hit A, and place a waypoint on the other side of the road. And once moved, you might not want them shooting at Germans at ranges of up to 500m, giving their positions away and inviting all kinds of nasty returning fire. You will want to HIDE your men, either by selecting that off of the orders menu or by striking H. Now repeat the process for the rest of the platoon, you will want to deploy them on both sides of the road as seen below.



Unhappy with one of the movement lines for your riflemen? There are two things you can do about that. First, you can select the unit (by either clicking on it or the offending movement path) and hit the backspace key to just delete the path; then re-lay the movement path individually. You could also right-click on the endpoint and drag it to the desired location.

Also, you probably want to move some infantry to the far side of the road, but you do not want them to just walk across an open road in enemy fire. Select an infantry platoon and just press A or select ADVANCE from the menu. Now, take the line just across the road, then give them a ROTATE order to face the road to finish it off. You will notice that your middle waypoint becomes a pyramid. To place orders like this in the future, you can do it as above, or you can just right click to drop a waypoint and continue giving orders. And if you don't like the last waypoint, then just hit SPACE BAR to exit order-giving mode and then BACKSPACE to delete the last waypoint.

A word of warning about placing too many unnecessary waypoints - because of the extra complexity of the order, it takes longer to give and as a result the command delay is extended. This hits green or conscript troops the hardest, you want to be careful or you will end up with 50+ second waits before movements. Needless to say, this is a huge disadvantage and should be avoided if at all possible.

Now, with everything in order, its time to hit GO and find out what the fates hold.

## **Welcome to WeGo**

After a few second of calculation, the movie will begin. Once you hit go, you have no control over what happens next, the orders you gave and those of your opponent (in this case your computer) determine what happens in the upcoming movie. Your men might not do exactly what you want at times, especially when under fire.

You will see that on the right hand side of the control interface some VCR-type controls have appeared. You can use these controls to start, stop, fast forward or rewind your 60 second turn movie. Do not press DONE yet!

It is also likely you will see a lot of the enemy tanks pop smoke and reverse behind it. This is because you are commanding a heavy tank with a big gun, while they can hardly hope to scratch your paint.

Feel free to watch the action as many times and from as many angles as you would like. When you are satisfied, click on the DONE button below the playback controls to continue to turn 2. But be sure—once you click on it you cannot go back and review the movie.

## **Moving Through Turn Two**

Chances are your KV fired at, and possibly even penetrated or killed an enemy tank or two. You might well have witnessed Combat Mission: Barbarossa to Berlin's "Death Clock". When you hit an enemy tank and it does not explode, you cannot be sure if it is dead or alive until the crew is seen to bail. That period is known as the death clock, and oftentimes you will put 2 or 3 shots into an enemy tank to be sure.

There is no need to move around, the enemy is coming to you, and moving the KV will cost you the boresighted bonus on the TRP, so sit tight and just hit GO.

## **Turn Three Orders Phase and On**

The lead probably really started flying last movie. But fear not—this tank can take it. In fact, there is not much we can do for you now that the battle is joined, all we can do is give you some general pointers for this fight. You know the basics now - how to give orders, how to navigate around the battlefield. The finer points of Combat Mission can be learned on as you play the game, and also in the CMBB ADVANCED TUTORIAL.

## **Additional Tips**

Forget old tricks and habits from other war or strategy games! Although some of what you know is still applicable in CM, much of it is not. So it is better to play with an open mind and a healthy dose of real-world combat tactics.

Experiment with the available orders - many of them have subtle side-effects and some are suited for certain actions better than others.

If things get hot, or ammo runs low, try reversing your KV down the little rise it is sitting on, around the flank, and taking the fight to the enemy.

Keep your heavy weapons at a distance from enemy infantry and use their suppressive capabilities.

Don't reveal your infantry or support weapons by opening fire at long ranges.

Keep your units in command and your Platoon HQs out of harm's way.

Replay the action movies as often as you like, but make sure you position your camera over your enemy once in a while - you can get invaluable information (screams when somebody is hit, sounds from enemy units even if not seen, etc.).

Try playing this battle again, but next time let the computer player setup for itself.

And most important - have fun!

# ***The Advanced Tutorial***

With this tutorial-scenario, you will get a closer look at the new commands of CMBB and how they can improve the execution of your battle plan. It is intended for those that are already acquainted with the basic commands or have played CMBO previously and want to explore the new features as well as how to implement them.

Start up the **Jaegermeister** scenario and select to play the Allies. The Russians are attacking in this scenario and that offers more opportunities to show the different commands as well as giving you the chance to use some of the new Russian weaponry. First, let's have a look at the briefing and the units involved. Your goal will be to seize the village at the crossroads. You have a combined arms force at your disposal and can expect various reinforcements. Although the Russian IS-2 has it's weaknesses, this tank is capable of winning stand-offs with German heavy armor. The reinforcements will include assault guns that are basically designed to support your infantry attacks on German strongholds. You will even get a Flame-thrower tank for eliminating fortified positions or clearing out enemy held buildings. Your regular infantry units will get support of engineers, which can be helpful in clearing out the houses of the village.

The map offers some distinct characteristics: The ridge in front of your forces can be used as a jump off point for the attack of your infantry on the village. Also, the crest provides a good hull down position for your assault. To the right, your flank is protected by woods. Enemy tanks will have difficulties maneuvering into good positions from that side. On the other hand, it offers your infantry a covered route to outflank the village from the right. You have high ground on your left. From a tactical point of view, it is of the highest priority to seize those heights. From the hill, you will have an excellent view of the German rear area. You need to control this so that you can be forewarned of enemy reinforcements.

## SET-UP

For this tutorial, you will split your forces into 3 groups: The main body (Task Force A) will advance to the ridge. The second group (Task Force B), made up of a company of IS-2's (4 tanks) with troops riding on them, will speed to the hill on your right. The tank riders will be used to screen the woods at the top of the hill and clear it of any nasty surprises waiting for your armor. One Platoon of infantry as well as your Maxim MG teams (Recon Detachment) will occupy the wooded area to your right. From here they will be able too overlook the situation in and behind the village. Finally, in order to soften up the objective, you will use your off-map rocket battery to prep bombard the village. You will be allowed to delay the strike according to your needs.

## TURN ONE:

Use **group commands** to roughly plot the direction the units have to go.

Task Force A can start to move cautiously through the scattered woods towards the ridge.

For Task Force B, I suggest the fast move command. When they reach higher ground, where they may be exposed to enemy observation, you can change to move to contact or hunt mode. As this force is moving parallel to enemy lines with it's flank exposed, you can order some tanks to turn their turrets in the direction of suspected enemy positions by making use of the armor cover arc command (made visually by a blue triangle over the area covered). Remember that unlike CMBO, the reaction time of the units to the move commands depends on the number of waypoints you plotted and not necessarily on being in command control. However, the advantages of a nearby HQ in command will show in the ability to spot and react to enemy threats more quickly.

The Recon Detachment must cross open ground to get to the woodson the ridge to the far right. Use the advance order to cross this ground.

To set up the prep-bombardment, you will target the center of the village with your 132mm rocket spotter. When you plot a target on the first turn, the rounds will fall immediately when the movie starts and are not subject to delays caused by adjusting fire. You can **add time** to the



strike in order to co-ordinate the barrage with your advance. For this tutorial, add a 4 minute. Do not delay for too long, as the lack of accuracy of rockets could endanger the safety of your own advancing troops.

## TURN 2-4:

Watch how your troops deploy. Change waypoints as needed, adjust cover arcs and monitor fatigue of your troops while they're running the open stretch to the crest of the ridge. On turn 4 your assault guns will show up. These arrive just in time to support your dash towards the forest on the town center, where the German first line of defense is likely to be. Move them to the place where the road tops the hill and let them **seek hull down** position near the crest.

## TURN 5:

Task Force A should have reached the bottom of the the ridge near the little shack and the scattered trees. Your infantry should disembark and take up their starting positions for their assault towards the woods. Keep them in hiding until more reinforcements join them. A squad can sneak into the shack in order to observe any activity in the woods.

The Recon Detachment should have reached the woods on the far right by now. Just in time to watch the rockets slam into the village. Use sneak and hide commands for now as you do not want to draw the enemy's attention.

## TURN 6-10:

If you have plotted your **seek hull down** waypoints well, your assault guns should be able to have a peek over the hill. An exchange of fire between the enemy forces dug in and your armor is likely at this point. Hopefully enemy guns will reveal their positions. If you are taking to many casualties you can change to **scoot and shoot mode**. For instance, if an enemy gun harasses your troops from the graveyard, you can try to take advantage by popping up at different angles, firing and then pulling back behind the hill. Plot the point where you want the tank to fire from and the point where tank should withdraw to. The tank will

move forward **fast**, shoot and will withdraw automatically in **reverse** mode.

By turn 10 Task Force B should have reached the hill on the left side. Disembark your infantry and use the move to contact command to screen the large forest. Turn your armor towards the frontline and delete or modify the cover arcs, if you have not already done so. Check LOS lines towards the open spaces behind the village and the road coming from the south west. Seek hull down positions for your tanks to cover these avenues of approach. Once your infantry has cleared the woods, send a recon party down the hill by means of an advance command in order to check out this part of the map for hidden strongpoints. The tanks on the hill should cover their advance.

The Recon Detachment on the far right can use this time to recuperate from their exhausting run over the open stretch. You can move the Maxim MG's into position to give support fire for Task Force A, when they go over the top.

In anticipation of this assault, you can instruct your 76mm spotter to lay down a **smoke** screen over the village.

## **TURN 11-15:**

You have probably taken some casualties, and most likely you have spotted and softened up some targets as well. The build up of your assault force, behind the hill near the scattered trees, has continued. Pay attention to command lines and fatigue when moving up to the starting position. You cannot assault with exhausted troops.

## **TURN 16-20:**

You will have noticed that your green IS-2 crews are no match for the German heavy armor at long range duels. The only way to deal with this rolling wall of steel is by making use of the combination of narrow **armor cover arcs** using **scoot and shoot** commands. Again, make use of various angles of approach and withdraw tanks as soon as they have fired first shot.

Are your troops rested? Has the smoke screen come into effect? Time to launch your assault!

If you need to lay down covering fire from the crest, you can split squads. Note that one half of the split squad

will receive any SMGs while the other half gets any light machine guns.

It is best that you let the half squads with the submachine guns do the assault, while the other half gives covering fire. Use the **assault** or **human wave** commands to rush your troops to the edge of the forest. While the first wave cautiously enters the forest, have the covering half squads join up with a simple **run** command. At the end of the turn the split units will automatically reunite if they are close enough to each other. Use the **advance** command to clear the rest of the woods.

Your soldiers will now be near the houses at the crossroads. Bring your engineers up and target the houses. As well as keeping the doors and windows under fire, they will throw explosive devices that can bring down the lighter structures. Ideally, your troops should now consolidate their positions in the town, while your IS-2's keeps the German reinforcements at bay.

Try to advance your flanks, especially on the left hand side where your tanks can block German reinforcements to the town by the road. Bring the assault guns and the KV-8S flame tank up in order to decimate any further enemy resistance. If everything works according to plan they should be free to roam the draws in the center area, in front of the village. However, keep them sheltered from exposure to the German tanks as they are no match for the German heavy tanks. Try to hold on to the end of the battle when your force will be relieved.



Crafts

# **The Ostfront**

The following is a quick listing of major new features of CMBB, mainly meant for players familiar with CMBO. It gives a quick overview of the hundreds of edits and changes incorporated in CMBB for those not wanting to read through the whole manual before starting up their first game. The latter is strongly recommended, however, but since people never listen... Of course, more details about these features can be found in the according sections of the manual. Please note that this is not a comprehensive list. There are so many new things in CMBB that we can't condense them all into a few short pages.

## **Artillery Changes -**

Strikes plotted on turn one can arrive immediately, or optionally you can delay the arrival of such 'planned' strikes by adding one minute at a time.

Strikes planned on turn one cannot be adjusted or canceled later. They continue to fall even if the FO was eliminated in the meantime.

If the FO can't see the target, two minutes are added to the strike delay (unlike previously where the time ticked down at half speed). This does not apply to pre-planned strikes on game turn one.

Artillery targets are shifted randomly if a spotting round is not used, which occurs when the FO is incapacitated or cannot see the target, rockets are being used, or the strike was planned on turn one (i.e. it's a 'preplanned strike'). Note also that spotting rounds are not used when firing on a TRP, but in this case the target is not randomly shifted.

Artillery adjusting - If you have an artillery strike that's coming in off-target (NOTE! If a spotting round is used, which is typical, the strike will come in ON target, so this is important only for strikes out of LOS and rockets, which don't use spotting rounds) and you want to correct its aim, you should adjust fire onto the originally desired target. Further aiming error will often be reduced, but this is not guaranteed.

Artillery fire may only be 'walked' if the FO can see the new strike target location.

Artillery strikes will continue beyond the incapacitation of the FO if:

1. The strike was planned on turn one (i.e. a “preplanned strike”), or
2. The strike had begun firing spotting rounds (or, if it’s not the type to fire spotting rounds, then was within the time period where spotting rounds would otherwise be fired).

Artillery time-on-target to a TRP is never greater than 60 seconds, even for high-level Soviet artillery.

“Reset Target” order is new and replaces the ‘R’ key during target selection for FOs.

Forward observers now show time to the next volley regarding reloading (as well as aiming) rather than simply saying “Firing” once the first volley lands.

Artillery spotters cannot intentionally hide and have a target at the same time.

“Planned” artillery strikes (the kind you set on turn 1 which can arrive immediately) are not allowed in meeting engagements.

Forward Observers (except those using radios) may not be passengers on vehicles.

### ***Gunnery optics***

There are seven types. Note that nations other than Germany exclusively use “standard” optics. All six other types are German-only.

Standard: Mediocre quality and magnification, normal field of view. Not listed in the data window.

Good: Typical good-quality general-purpose German optics, mostly used by tanks. Crew must be green or better to use without penalties.

Binocular: Same as “Good” but allows use of two eyes for better depth perception. Used by early Tigers and Panthers. Crew must be green or better to use without penalties.

Long-range: High-magnification German optics, with limited field of view, used by assault guns and tank destroyers. Crew must be regular or better to use without penalties.

Very long-range: Extreme magnification power. Used only by late-model Jagdpanther. Crew must be veteran or better to use without penalties.

Dual-Magnification: Can switch between two different magnification levels, to optimize both spotting and tracking. Used by late-model Panthers. Crew must be veteran or better to use without penalties.

Narrow: Cheaper (by German standards) optics of generally good quality but limited field of view. Often used by lightly-

armored self-propelled guns. Crew must be regular or better to use without penalties.

Good magnification allows for better spotting and gunfire accuracy at long range, except in low-light conditions where the greater need for light of high-magnification optics becomes a hindrance, reducing their effectiveness relative to lower-power lens.

Wider field of view allows for quicker target acquisition and tracking, which allows the gun to be aimed (and fired) faster. Limited field of view can cause difficulty tracking moving targets at close range.

Hot temperature reduces optical performance, especially for German equipment. The reduction is lesser for more experienced crews.

Extremely cold temperature reduces performance of 'standard' optics, especially for inexperienced crews.

Extremely cold temperature increases performance of German optics, especially for experienced crews.

### ***TacAI Changes -***

Vehicles won't move "out of the way" of another vehicle passing through if the other vehicle is substantially smaller or if the stationary vehicle has a covered arc.

The TacAI won't change an infantry unit's area target when that unit is set to use its demo charges. It's "sticky" now (note: this can be dangerous if enemy units are immediately nearby).

TacAI won't fire smoke with a unit which has been given a direct target unit by the player, except possibly if other ammo types are not appropriate (e.g. out of range, none left, etc.).

Sneaking and hiding units are more likely only to target directly-threatening enemies.

Sneaking units can shoot (at reduced effectiveness and ROF, and only out to 100m).

Units using the "Move" command are less likely to attempt to complete their movement when under fire, opting instead to head for cover (and halt there) or if no cover is available, then halting where they are.

Pillboxes will bail out due to morale effects only when they reach Broken (as opposed to Panic).

Pinned units now STOP moving (except when in the open and their next waypoint is quite nearby and in cover), and units pin down much sooner than before.

Soviets are equal to Germans in order delay efficiency (for an equal experience level) starting in January 1944. Before that, Soviets order delays are one experience level lower than for a

German unit of the same experience (ie. Soviet Regulars have similar delays as German Greens)

Light AA guns will "rapid fire" at close-range enemies just like MGs do.

Tweak to TacAI so it won't use tungsten shells simply because you're running low on AP.

Units won't fire small arms at an area target they're set to use demo charges against.

Units will fire rifle grenades and panzerfausts at human-chosen targets without holding back out of concerns that the weapon will not damage especially tough targets.

Infantry units under air attack are likely to scurry for cover if necessary.

Ski troops. They begin the game with skis but will lose them (permanently) if they attempt any move other than: Move, Move to Contact, or Run.

### ***Ammo Changes -***

Changes to ammo "code letters". The full set is:

HE - high explosive

AP - armor piercing

HC - hollow charge (HEAT)

T - tungsten

C - canister

S - smoke

F - flame

### ***Force Readiness:***

All battles, even those in the editor (i.e. not just QBs) are set as Assault / Attack / Probe / Meeting Engagement. This allows for the Force Readiness feature (see below).

Force Readiness. At a certain point, when your troops run very low on ammunition, it has the same effect as you offering a cease fire. This represents troops not necessarily wanting to fire off their very last bullet because even if they eliminate the current enemy, in real life another one might come along very soon (beyond the scope of the game, but important to simulate in some way nonetheless). The level to which troops will expend their ammo depends on the battle type. Defenders generally will risk using up more than attackers, except in Assaults where both sides are willing to use almost everything. In Probes, the Attacker is more cautious and will trigger this feature earlier, meaning battles will typically end sooner. Attacks and Meeting

Engagements are inbetween. Note that if only one side has triggered this due to low ammo, the game will not end unless the other side also triggers, or voluntarily offers cease fire. This feature is NOT active during Operations.

### ***Airplanes -***

Reworked with individual data for weapons, speed, damage resistance, etc. Also, airplanes can now be purchased by the computer and no longer have a 10% random chance of scrubbing a mission.

Sighting an enemy airplane will cancel Move to Contact orders only if the airplane is attacking a location within 100m of the moving unit.

### ***(Quick) Battles and Map Editor -***

In Quick Battles, the parameters used to set up the game are saved in the scenario briefing, which you can access with Alt-B.

New Quick Battle parameter: ammunition level.

Maps can be imported into Quick Battles from scenario files.

Map generator makes use of the 'gentle' slope (1.25m per level) when appropriate.

In editor unit purchase screen, the 'popup' info shows which artillery FOs can fire smoke.

"Force Types" are much more detailed (e.g. "Romanian Mechanized") and affect which TO&Es may be purchased. In Quick Battles, mechanized forces will be given more points to spend on vehicles than infantry-only forces (even for the same type of battle, e.g. "Armor").

The code can apply different rarity values for units depending on geographic region or Force Type. Example: the King Tiger is "extremely rare" in Finland

QBs have an "unrestricted" troop quality option.

QBs have "huge" map size option.

QB Assault Defenders must spend a certain portion of their points on fortifications.

Quick Battles have "casualty" setting that depletes your forces before the battle begins.

In QBs the month can be random as well as the year, and when month is random, the temperature is set automatically (with some randomization).

Battle maps may be up to 9 square kilometers (4km max in either dimension). Operation maps can be up to 24 square kilometres (6km max in either dimension)



In QBs, 10% of your troops will show up at one experience level lower than you expected, and 10% at one level higher. The random experience level variations in quick battles are now (roughly) “balanced” so you get roughly even amounts of raisings as lowerings, largely defeating any purpose to cheating.

QBs apply the experience setting (low/medium/high) appropriately to the various forces available. For example, “high quality” Russian troops in 1941 will only be Regular.

In main editor, all unit experience levels are allowed for all force types (not the case in quick battles).

Craters can be placed in map editor by Alt-1 through 5 key combination (1 – small crater, 5- huge crater).

In QBs when you have less than full ammunition, Forward Observers’ ammo load won’t have the slight randomness that other units do, to prevent people re-purchasing FOs to get maximum ammo loads.

Maps imported into Quick Battles now include troops. This can also be used to import the final autosave in a previous battle to “continue” the battle. (NOTE: The feature provides no hand-holding or safety features, so you should not overload a small map with zillions of new troops on the next battle, you should make sure you have adequate setup zones, etc.)

When loading a map into a QB, importing its troops is optional.

Variable-end scenarios are capped at a maximum of an extra 10 turns or 25% of the original length of the scenario, whichever is less.

When global morale falls below 25% it’s the equivalent of making a standing cease fire offer (privately).

In the editor, if you place two sibling half-squads near one another they automatically rejoin to form the original squad.

Infantry reinforcements will arrive riding tanks when possible.

Units default to NOT being able to exit for points.

Volkssturm and Partisans may never have vehicles in a QB unless you set it to Unrestricted troop type (they will be treated as though Infantry troop type was selected).

### ***Weather and environmental effects -***

Wind direction and strength can be set.

Blizzard (i.e. heavy snowfall, limited visibility).

Weather graphics have an ‘extreme’ setting.

Soft ground does not remain snowless if the snow is medium or deep (i.e. only when snow is “light”).

You can have frozen rivers on a snowless map, and snowy maps with unfrozen rivers.

Editor and QB screen allow you to enter the Region and Temperature

Fires often start "small" and have no effect on gameplay. But they can grow (and spread) to large fires which cause all units to exit.

Trees are taller now, especially pine trees. This may mean that you will want to use SHIFT-T to drop your tree coverage setting in order to maintain a good frame rate.

Destroyed buildings kick up smoke that lasts for a few minutes.

Rural maps in central and southern regions, when tree level is set to 'open' will generate steppe.

Open ground tiles change in hue (to more yellowed) if there is more than a trivial amount of steppe terrain on the map. This better matches the real-world coloring of the Russian steppes.

Buildings show damage graphically when they reach the "lightly damaged" state. This is when building is approx. 40% (or more) damaged.

Buildings have textured floors, stone and wood.

When the camera is inside, building sides are transparent so you can "see out".

Units move through pine trees faster than heavy woods (due to less underbrush) and LOS is a little bit clearer through pine trees too.

Some terrain has visual "doodads" for "height", e.g. grass, brush, rubble. These have no implications on the game engine but are for visual depth only (i.e. the terrain modifiers do not change by presence of doodads)

New terrain types: Steppe, Rocky, Cemetery, Wood Fence, Peasant Shack, Factory Building, Soft Ground (doubles as "snow free" area during light snow scenarios).

Added "flat rubble" tile (without knocked down building walls)

For internal LOS calculations, rubble is considered taller than before.

Large stone and factory buildings are harder to destroy.

Small-caliber guns are less likely to cause significant damage to buildings.

Night when the weather is other than "clear" is considered "extra dark", and the maximum visible range is 75m or even less depending on weather.

Fog and Rain weather can be combined.

When a line of sight passes through a good bit of concealing terrain, infantry units are harder to spot than previously.

Minefields can be reduced or eliminated by shellfire (though this will not be explicitly shown - you just have to judge roughly by how many craters you see, and hope).

Warm temperature reduces fatigue-recovery rate by 15%. Hot temperature by 40%.

Base chance for MG to jam is reduced somewhat overall, but is then increased at the following temperatures:

Hot: +200%

Warm: +50%

Freezing: +25%

Extreme Cold: +100%

### ***Vehicles -***

Wheeled and half-tracked vehicles display "Off-Road Ability" of Good, Fair or Poor.

Tanks destroyed by close assault are immediately known to be destroyed.

Standard grenade attacks versus tanks are reduced in effectiveness.

Buttoned vehicles have a blind spot for infantry (who's not targeting the vehicle) within 15m provided the infantry is not in the front 60-degree arc centered on the turret facing.

Nearby artillery strikes cause vehicle morale effects.

Crews bail out of soft-skin vehicles much faster.

If vehicles reach "Broken" morale state, they may retreat off the map if that provides a nearby escape from a threat (similar to what infantry does).

Unbuttoned crew are more likely to be hit by small arms fire.

Halted vehicles rotate their hulls more slowly.

Vehicles in a poor morale state are less likely to unbutton on their own.

Vehicles with crew casualties can suffer 1- or 2-man turret penalties.

Vehicle hunt and move-to-contact speeds have been slowed down by 33%.

Tanks will button up when they receive gun hits.

Vehicle platoon sizes vary, depending on type and date.

### ***Armor penetrations model-***

Lethality to vehicle crew of armor penetration has new, more sophisticated system which newly takes into account the mass of armor sent into the interior, the likelihood of the armor to

fragment, and the size of the bursting charge of AP ammo, if any (and the chance it might not function properly on penetrations which don't make it cleanly through). You'll find that AP "shot" (which has no explosive capacity) tends to do a better job penetrating armor, but less damage once inside compared to AP "shells" which have an explosive charge. With small guns it now often takes multiple hits to knock out tanks, and often this will be from injuring or killing the crew rather than significant physical damage to the tank itself.

In unit data window, the muzzle velocity is printed in the penetration data per ammo type rather than just once in the 'main weapon' line. Also, the subtype of AP is indicated.

Armor penetration success rates vary randomly to a greater extent.

Russians will use uncapped AP ammo until April 1944 and ballistic-capped APBC thereafter (exceptions: 122mm switches over in August and 100mm never switches to APBC). The APBC is generally more powerful partly because AP ammo was poorly manufactured, especially in 1941, and also because Russian APBC has a blunt nose shape which 'grips' on contact and does reasonably well against highly-sloped armor. NOTE: Russian 45mm AP ammo in 1941 is especially poorly made.

When you draw a target or LOS line to an armored target, the "Kill" display has more gradations: Excellent, Very Good, Good, OK, Fair, Low, Very Low, Rare, None.

Tanks receive gun damage considerably less often.

German hollow-charge shell armor penetration performance increases through the war. (Internally, the Hl.39/A is used in 1941-2, the 'B' type in 1943-9/1944, and 'C' type thereafter. These dates are rough due to scant information on when each type was actually used).

Small shells that penetrate armor are now less likely to result in a knock-out. Small guns will often have to achieve several penetrating hits to secure a knock-out (though if the target has low-quality hard/brittle armor, as the Soviets often do, then even small penetrations are more deadly due to armor splinters hitting the crew).

Armor penetrations that penetrate less than 15% "beyond" the armor resistance will be displayed as "partial penetration" and often are less dangerous to the crew of the tank which was hit. (Note: the reduced lethality is not a hard cutoff at 15%, that's just the cutoff to show the 'partial' message).

Armor penetration for bullets (i.e. 12.7mm and under) reduced slightly.

## **New Orders -**

Backspace/Delete will delete a selected mid-waypoint provided it's one that was planned in the current orders phase (i.e. colored white).

Human-wavers start running when within 80m of the destination, but not until they've moved at least 10m first. Human-waving units may not adjust waypoint positions.

Sewer movement: Allowed by scenario parameter. Movement takes place between large heavy buildings only and is slow. Any sewer move has a 10% risk of "death in the sewers". Units must be Veteran+ or in-command Regular. Heavy weapons not allowed in sewer.

Covered Arc and Cover Armor commands added. Holding CONTROL while setting a covered arc sets it to 180 degrees.

Hiding units with covered arcs will UNHIDE as soon as they know a spotted enemy enters their covered arc. This is a handy way to trigger an ambush. HOWEVER, note that covered arcs do not FORCE your units to fire on any and all enemies inside the arc. Your units will not waste ammo on lousy shots.

Clicking on a movement path will select that unit.

Withdraw order - beware, it's about 50% likely to panic your troops, depending on their experience!

Vehicle "Shoot & Scoot" order

Orders Delay depends on amount of waypoints for a unit: more delay is allocated "up front" for the first move, and less for each additional waypoint. Also, orders delays will never exceed 3 minutes.

Follow Vehicle. Infantry units (without heavy weapons) can "follow" enemy vehicles with the intent to close assault them even if the vehicles are moving. The interface is very similar to embarking on a friendly vehicle. Just choose a movement order for your infantry unit, then place the cursor on the enemy vehicle and click. The vehicle must be within 50m. If at any point the enemy vehicle moves beyond 50m, the follow vehicle order will be canceled. The follow vehicle status will be KEPT otherwise (unless you change the movement orders yourself), even after your men have reached the vehicle, so if the enemy vehicle survives, but several turns later tries to move away, your men will continue to follow it.

If a Move-to-contact unit had "hide" planned as the last part of its move, it will hide when it makes enemy contact.

## **Units –**

Graphically, infantrymen in squads no longer have a “fixed” position relative to one another. They move and rotate in a more “individual”, natural-looking manner.

Movement and rotation speeds for ordnance drop in proportion to casualties taken.

Vehicles and infantry ordnance units, which have neither moved nor fired, and are located in trees, are harder to spot (camouflaging efforts are assumed here).

Weapons teams have a “self defense” small arms capability. They will often fire a few shots at enemy infantry that gets within 100m. It’s intentionally not that effective - just a minimum of self-defense ability so they’re not totally helpless.

Germans sometimes carry captured Russian PPSH SMG.

Units with binoculars are indicated as such in data window.

Units are (partly) sorted when you go to the map.

Fortifications are cheaper than in CMBO

Daisy-chain mines slightly larger now (12m x 12m)

New close-range anti-armor weapons: Rifle grenade, Molotov cocktail, Panzerwurfmine, and Soviet RPG (available June '43).

2-man “Tank Hunter” teams.

Squad types have different ammo loads depending on their weapons. Generally the more SMGs the lower the ammo load.

New fortification “unit”: Trench.

## **Fatigue -**

Fatigue system has changed.

- Exhausted units cannot assault or advance.
- Fatigue for running is increased.
- Name changes: “Tired” is now called “Tiring”, “Weary” is now called “Tired”.
- Fatigue reduces ROF for infantry somewhat.

Recovery rate from fatigue is reduced by lower global morale. So when forces are beaten up, you’ll find that your ability to conduct mobile operations is curtailed. Defensive capability won’t be harmed much, but attacking gets progressively harder to do. This helps lead to a “natural end” for a battle.

Exhausted units crawl especially slowly.  
Units rally more slowly when fatigued, especially when exhausted.

## **Dug-in:**

Defender Dug In Status (set in editor parameters) can be of four types:

1. None - defenders do NOT automatically dig foxholes.
2. Normal - the original way, where defenders dig a foxhole in their location
3. Normal + Fallback Positions - see below
4. Normal + Fallback Positions + Vehicles May Dig In - see below

"Fallback Positions" may now be created in the setup phase by the owning player. Press ALT-F to enter fallback foxhole placement mode. Click the map to place the foxholes you like, and click a foxhole to remove it again if you make a mistake. The total number of foxholes allowed is limited by the number of non-heavy-ordnance infantry units you have. Note that these fallback foxholes are IN ADDITION to the "automatic" foxhole each infantry unit normally gets. In Quick Battles, Meeting Engagements and Probes get "None", Attacks get "Normal" and Assaults get "Normal + Fallback Positions".

During setup (unless defenders are not allowed to dig in) defending infantry units will be shown with their initial foxholes. As you move the units, the foxholes move along with them. If you wish the unit NOT to dig a foxhole, use the "Dig In" command, which toggles the intent to dig a foxhole on and off.

## **Operations -**

Battles and operations can have up to 30 reinforcement groups.

### **Operation Types**

1. Advance
  - Battle map is portion of operational map, and "slides forward" between battles.
  - Attacker wins by reaching the end of the operational map (this may take several battles).
  - Units in "no mans land" are shifted between battles, back to their own front lines.
2. Assault
  - Battle map is portion of operational map, and "slides forward" between battles.
  - Attacker wins by reaching the end of the operational map (this may take several battles).

- Units in "no mans land" are NOT shifted between battles. Some may be cut off and will be 'padlocked' during the next battle's setup phase, and will not be resupplied.

### 3. Static

- Battle map covers the entire operational map.
- Victory is judged by causing casualties to the enemy and holding victory FLAGS.

- Units in "no mans land" are NOT shifted between battles. Some may be cut off and will be 'padlocked' during the next battle's setup phase, and will not be resupplied.

Operation battles may last up to 60 turns, and can have variable end times like regular battles now have.

Operations maps can be up to 4 km "wide" or 6 km "long"

Fortifications are allowed as reinforcements (scenario authors are urged to use discretion!)

When calculating the "new front line" (N/A to Static Operations) infantry units are weighted less if panicked or brittle, and not at all if broken or routed.

Units which remain in "no man's land" between battles end up in a limited setup zone so their setup options for the next battle are limited (I'll explain this in more detail later). "No man's land" can be up to 800m across. NOTE: In CMBO people complained about no-man's land and wanted to reduce it to zero. This is allowed but NOT RECOMMENDED. No man's land is a COOL feature and ought not to be avoided, especially now that 2 of 3 operation types do not shift units between battles.

Guns of transport class 9 or higher (these are marked "no embark during battle" in the data window) may not reposition during the setup phase beginning each operational battle, except the very first battle. However, they may embark on a transport vehicle of sufficient towing capacity, and immediately disembark into any other area of the same setup zone (i.e. this means you need to have a transport vehicle on map or else such a gun cannot move after setting up in the very first battle).

Operation reinforcements can be "scheduled" or "reserve" as in CMBO, or a new type: "Linked to Map". This new type puts a reinforcement marker on the (editor) map for the author to place as he wishes. Then during the game, if and when the "battle window map" slides to enclose this reinforcement marker (imagine as the attacker is progressing forward from battle to battle) the reinforcements attached to that marker will be "triggered" and appear on the map. Note: their placement will be "normal", not directly on top of the marker itself. The marker is just the "trigger". Reinforcements can only be "Linked to Map" for advance and assault type operations.



### **Cool other features -**

New Camera Shake option (SHIFT-K) that adds “bounce” when you’re camera-locked to a moving unit.

x16 zoom level added.

SHIFT-Q hides play-aid graphics – great for taking screenshots!

Axis base color is blue, Allied is red (after setup phase is finished).

When you drag a targeting/LOS line to an enemy near enough (20m) to a TRP that your unit qualifies for a boresight bonus, you’ll see “boresighted” indicated. Note that your unit cannot have moved in order qualify for this bonus.

It is possible to save the game from the AAR screen.

(Windows version) Press Alt-shift-; (i.e. Alt-;) and this will reactivate the ESC key ability to switch to the desktop (in case you prefer ESC to alt-tab for this purpose).

### **For Modders:**

More slots (20 total) for faces.

‘Tracers’ have textures instead of solid color.

Soldier heads and torsos have better models.

*Crafts*

## Appendix C - Troubleshooting

We have taken great care to deliver a bug-free, compatible and playable game to you. However, the vast myriad of different hardware and software configurations available today makes it impossible to provide solutions for 100% of them. Below you will find answers to a few known issues as well as a guideline to any problems you might encounter with the game.

### Install Issues

**Problem:** Setup halts part way through the install process. May indicate a problem reading a specific file or resource.

**Cause/Solution:** Could be a dirty or scratched CD. Advise to do the following:  
Use some rubbing alcohol and dilute it with water (about a capful total) Dip a cotton swab into the solution and then gently rub the soaked swab across the shiny surface of the CD. Be sure to work any area that show smudges or scratches. Let the CD air dry. Reinsert the CD and try to reinstall. You can also use any aftermarket CD Cleaning kit or cleaning system to do the above.

If that fails see below for Manual Game Installation Procedure.

**Problem:** During installation on a Windows system setup prompts, "Please insert disk 0 that contains the file data 3.cab." or any other disk or data.cab file.

**Cause/Solution:** This occurs when a previous program leaves its setup files in the Windows Temp folder. Browse to your Windows Temp folder (default location c:\Windows\Temp) and delete all files and folders located there. Now rerun setup.

If that fails see below for Manual Game Installation Procedure.

## **Manual Game Installation Procedure (Windows):**

Create a directory somewhere on your computer called "CMBB" (Recommend C:\Program Files\CMBB). Now open Windows Explorer and browse to the Combat Mission CD. Copy the Wav, BMP and Scenarios folders into your new CMBB folder. Be sure that you copy the folder AND files inside of them! Now copy the Combat Mission.exe file from the CD to your new CMBB folder.

Now launch the game from your hard drive. You will still need to have the CD in the CD drive to play the game (this is done for copy protection reasons) but all the files will be on your computer and it should be okay.

## **General issues**

### **I have problems with transparency effects (smoke and buildings)**

Unfortunately, some older graphics card drivers have limitations which do not allow transparency to be displayed properly: mainly apparent in CM's smoke and buildings. That's why we provide "fast and compatible" options for those who encounter problems with this. Simply leave the "Occupied Building Transparency" option (Shift-O) OFF, and set smoke effects (Shift-I) to "Fast and compatible".

### **Fog graphics either don't show up or the screen goes all white (Windows)**

You may need to enable "fog table emulation" in the control panel for DirectX and/or your video driver. Check with your manufacturer to find if this setting is supported (most modern video cards do) and how to enable it, if available. If that doesn't solve the problem, you can disable fog graphics by pressing SHIFT-W once or twice.

### **CM crashes or exhibits very strange behavior (PC/Windows Systems)**

DRIVERS! DRIVERS! DRIVERS! IMPORTANT! Before going further the most critical thing is to ensure you have up-to-date driver software for your graphics card, DirectX, and even your mouse. Nearly ALL compatibility problems can be directly linked to obsolete or buggy drivers. Good websites to visit for more information are:

<http://windrivers.com>  
<http://www.3dchipset.com>  
<http://www.reactorcritical.com>  
<http://www.3dfxgamers.com> (for Voodoo cards)

**DIRECTX:** DirectX 8 is required, and it's a good idea to update to the very latest version from <<http://www.microsoft.com/directx/default.asp>>.

*NOTE: If you still have problems after installing the latest DirectX, it is often a good idea to REINSTALL your video and mouse drivers, because the installation of DirectX may have overwritten them.*

**CUSTOM THEMES/CURSORS:** Do not use custom Windows "themes" or custom mouse pointers! If you get mouse pointer "flicker", or notice any unexplainable problems (even those which seemingly have nothing to do with cursors or the mouse) try changing the "Windows Theme" and mouse pointer to the Windows Default.

**MICROSOFT INTELLIMOUSE:** has been linked to various problems including crashes and graphical corruption. Obtain and install the latest drivers from Microsoft. If this does not solve the problem, disable the Intellimouse software (there should be an icon you can click in the lower-right portion of your screen, in the task bar).

**LOGITECH MOUSE/TRACKBALL:** Problems have been linked to obsolete drivers for these products. Obtain and install the latest drivers.

**OVERCLOCKED GRAPHICS:** If your video card has an over-clocking feature, this may cause very strange graphical problems. Drop the clock speed back to normal, using its control panel.

**NVIDIA DRIVERS:** We have encountered a variety of issues with earlier drivers from Nvidia. The latest drivers are version 29.42 and have proven to be both stable and trouble free. You can download these drivers from Nvidia's website: <http://www.nvidia.com>

**ATI RAGE 128 and NON-INTEL MOTHERBOARDS:** If you have a non-Intel based motherboard chipset and an ATI Rage 128 / 128 Pro, then you may want to get the earlier

drivers (some VIA chipsets may be fine however), because the most recent ATI drivers for these cards (dated March 9, 2000) have caused problems for some users. Older drivers that may actually work better are available at the ATI website:

v. 4.11.6216: [http://support.atitech.ca/drivers/win98\\_4116216.html](http://support.atitech.ca/drivers/win98_4116216.html)

v. 4.11.6263: [http://support.atitech.ca/drivers/win98\\_4116263.html](http://support.atitech.ca/drivers/win98_4116263.html)

**RIVA:** Users of Riva122/128zx based cards are advised to use the nVidia reference drivers to avoid problems.

The first time you run CM, it checks your graphics hardware by asking you "Can you see this?" It also displays the name of the graphics card it has detected, and a monitor resolution and refresh rate. If these are acceptable, you should click the button (if not - or you want a different setting, just wait a few seconds and alternate choices will be shown, one at a time). Once you click the button to accept, the program then saves this as your default video setting. If you ever want to change it (e.g. you buy a new graphics card or monitor, or are troubleshooting to find a configuration that works) just delete the CM "preferences" file (called "Combat Mission Bynd Ovr Prefs") and the process of checking your graphics hardware will be reset and begin anew the next time you run CM.

Make sure that graphics acceleration for DirectX/Direct3D is ON (in the DirectX control panel).

Problems with Sound? Go to the DirectX control panel. Click on the DirectSound tab. Turn down (or off) hardware acceleration for sound.

If CM won't start up properly, or won't show 3D graphics, try setting your desktop to a smaller resolution before running CM again (it's a good idea to delete CM's "prefs" file too).

You may need to examine the "control panel" for your video card and experiment with the settings. Pay special attention to "refresh rate": if there is a setting for "optimal", you should probably use it.

**Problem:** Saved games (or ones downloaded) do not show up in the Scenario/Operation list at the Main Menu.

**Cause/Solution:** Game is being run from the CD instead of from the installed location on the computer.

Make sure you are running the game from the hard drive and not off the CD. While the CD being inserted is required to run the game you need to be sure that the game itself (the Combat Mission.exe) is being run from the installed directory location on your computer. If you run the game from the CD it will only show files on the CD and not the new ones being saved.

**Problem:** Game reports that CD needs to be inserted in order to load the game.

**Cause/Solution 1:** The CD DOES have to be inserted into the CD Drive in order to launch the game. Once the game has loaded the CD can be removed.

**Cause/Solution 2:** Some users of Windows XP have reported this problem occurring with certain models and brands of CD-Rom Drives (most notably Creative Labs drives). Please check with the manufacturer of the CD-Rom drive and Microsoft for updated Windows XP drivers and software.

**Problem:** Game locks up or displays a black screen immediately after game is loaded.

**Cause/Solution:** This is usually caused by a QuickTime conflict as the game tries to play the intro movie. In order to disable the intro movie playback you will need to hold down the SPACEBAR when the game is loading. That will toggle the movie playback on/off.

**Problem:** Game seems to run in a lower resolution than desktop.

**Cause/Solution:** Combat Mission always tries to run in the same resolution as the desktop but if the desktop resolution is changed after the game is initially run it may not detect this change. To fix you will need to locate the "Combat Mission Bynd Ovr Prefs" file and delete it. Now re-launch the game. It should now prompt you to accept the current resolution. If you wish to run Combat Mission in one resolution and your desktop in another you will need to run a 3rd party Desktop resolution program such as QRes available at <http://www.berend.com/qres.html>

**Problem:** Sound in game used to work but is now silent.

**Cause/Solution:** The sound in the game can be toggled between ON, ON+Ambient and OFF. These settings are toggled via the Shift-S keystroke.

## Video Issues (Windows)

**Problem:** Operating System is either Windows XP or Windows 2000 and I am experiencing graphics corruption in Combat Mission with my Nvidia based video card (Geforce, TNT etc...)

**Cause/Solution:** The graphic corruption is caused by incompatibilities and bugs in earlier Nvidia video drivers. Recently Nvidia has released a new set of video drivers which are version 29.42 From our own internal testing as well as the testing of other game owners these beta drivers resolve ALL graphics issues within Combat Mission. These drivers can currently be found at the following site:

<http://www.nvidia.com>

**Problem:** When game is launched an Unhandled Exception: c0000005 at address: 0053d978 & 005419e5 (can also be some other addresses but they always start with c0000005) error occurs.

**Cause/Solution:** At some point a DirectX component file has become corrupted or is no longer correctly functioning. In order to resolve this issue you should re-install DirectX. Recommend the latest version, which is now DirectX 8.1 and can be obtained directly from Microsoft at the following URL:

<http://www.microsoft.com/directx/homeuser/downloads/default.asp>

**Problem:** Video card is a Voodoo 5000/5500 and all in-game text is blank or white and unreadable.

**Cause/Solution:** Issue is caused by a fault in the Voodoo Drivers. In order to fix this issue you will need to go into your Voodoo Control Panel and change the level of Direct 3D Full Screen Anti-Aliasing (FSAA) to any setting other than the default, which is normally set to Best Performance. That will clear up the text.

**Problem:** Video Card is a Voodoo based chipset (4000/5000/5500 but could be others) and when game is minimized and restored with the ESCape key the display is corrupted.

**Cause/Solution:** Caused by faulty Voodoo drivers. One solution is to select Single Chip Rendering Option from the Voodoo Control Panel. This will fix the corruption but game performance may suffer slightly. A workaround is to save the game while the graphics are corrupted, exit the game and then re-load. The corruption will be cleared.

**Problem:** Video Card is a Nvidia based one (Geforce, Geforce II, TNT 2 etc..) and in-game text is blurry or flickering.

**Cause/Solution:** This issue appears in various Nvidia reference drivers including the 12.xx based Detonator 3 drivers. Nvidia has recently released a new set of drivers which are version 29.42 (or higher).

**Problem:** Video Card uses the Kyro II Chipset (Hercules Prophet 4500) and text and graphics in-game are blurry or corrupted.

**Cause/Solution:** A combination of the latest version of DirectX (8.1) from Microsoft and the latest Kyro II drivers (9.015 or higher) will resolve all corruption displayed.

You can download the DirectX 8.1 version from this site:

<http://www.microsoft.com/directx/homeuser/downloads/default.asp>

and the latest Kyro drivers directly from Hercules at this location:

<http://www.hercules.com>

You may want to also upgrade the video card BIOS and those files are also available at the site above.

**Problem:** When mouse is moved across the screen it leaves a trail of corrupted graphics. Cursor itself may also appear as a white block.

**Cause/Solution:** That is usually caused by running with Custom Mouse cursors or having a Windows Theme Packs installed. Make sure that you are only using the Standard Windows Default Mouse cursor and disable or uninstall any custom mouse animations and effects that may have been loaded with a Theme pack. You may also



want to upgrade your mouse drivers as applicable. Check with the manufacturers website for updated mouse drivers.

## TCP/IP Troubleshooting

**Firewalls and Proxies** - If either player is behind a firewall (hacker protection) or is using a proxy system, you might need to reconfigure your system. In order to play a network game, Combat Mission requires that TCP port 7023 be open for all outgoing and incoming transmissions. Please configure your firewall and proxies accordingly. Users of the software packages Black Ice Defender and Zone Alarm may have to disable the software completely before a successful connection can be made. It is possible that some users of Black Ice Defender might have to do a full uninstall of the package in order for CM to be able to work correctly for TCP/IP play

**Cable/DSL Router Configuration** - If you use a home broadband router like the LinkSys Cable/DSL 4 port Router and wish to host games you will need to add TCP port 7023 to the routers forwarding table. You then need to match port 7023 to the internal IP address of the computer that you want to host the game with, then use the routers control panel (usually accessed via your browser) to get the external IP address given out by your ISP. Give this external IP address to your opponent and connection should work with you as Host.

**Internet Connection Sharing** - Many people use ICS on their home LANs to access a broadband or modem connection to the Internet across multiple computer systems. Currently a computer that is connected to the Internet via an ICS connection can not Host a Combat Mission game out to the Internet. They can however host locally to systems that are connected on the same home LAN. They can also still attach to a hosted game normally on the Internet or the home LAN. This limitation on hosting affects systems that gain their access to the Internet SOLELY through an ICS connection.

**Problem:** I am on Windows XP and I can't seem to host a game. I can connect to game though.

**Solution 1:** Windows XP comes with its own built in Firewall which may need to be modified or disabled in order

to host games. First check your network properties by going into the Control Panel>Network Connections. Find the network adaptor that is used to establish your connection to the internet. Right click on the Network Adaptor and select "Properties". Click the "Advanced" tab. If there is a checkmark in the box labeled "Protect my computer and network by limiting or preventing access to this computer from the Internet", you have XP's built in Firewall and will need to configure it to allow you to host CMBB games. If it is not checked, then see Solution 2 below. In order to enable the firewall to allow you to host a CMBB game you will need to click the "Settings" button from the "Properties>Advanced" screen. Once you click the "Settings" button you will see a list of Services and three buttons at the bottom of the screen. Click the "Add" button. You will be presented with another screen with several blank fields. The first field is for you to describe the service you are adding. Just type something like "CMBB Network Games" in that field. The second field is for the name or IP address of the computer which needs to host this service. You can type 192.168.0.0 (default IP of your system) or type in the computers "name". If your computer is part of a home network where each system has its own configured IP address then type in whatever IP is assigned to your computer or alternatively you can use the computers "name". In the third field "External port number for this service" type in the number "7023" (without the quotes). In the fourth field, "Internal port number for this service" type in the number "7023" (without the quotes). Make sure the button "TCP" is selected. Click the OK button 3 times to save the changes and exit. You should now be able to host games.

**Solution 2:** If your Windows XP is connected to the internet through a computer running Internet Connection Sharing you can not host a game but you can still join a game hosted by someone else.

## **Loading a PBEM file does not work**

If one player can't load a file it is most likely because of a transmission error due to an incompatible email format. It is very important that both players use the same, compatible method for sending PBEM files to each other. Macintosh users playing against Windows users should pay close attention to this! Generally it is best if "uuEncoding"

is used without any form of compression. Since the files are text, software compression generally doesn't reduce transmission times that dramatically. If you should use compression make absolutely sure that it can be decoded by the player on the other end.

## Reporting bugs

**The armor slope of that Panther is off by 0.5 degrees! My life is ruined!**

If you spot any inaccuracies, problems, bugs or simply any weird stuff in the game, please feel free to post it on the Combat Mission message board at [www.battlefront.com](http://www.battlefront.com). We've taken great care to bring you a bug-free, historically accurate game, but since we're realists we are more than happy to "tweak" the game if there are demonstrable inaccuracies. These tweaks will then be released in official patches, available for download from [Battlefront.com](http://Battlefront.com).

## I need Tech Support

If none of the above resolves your problem or if your specific issue it is not covered then please login to the Tech Support forum and search through the extensive list of posts as you may very well find info on it there. If you wish to post a message seeking assistance to the Tech Support forum please be sure to include as much information about the problem AND your system as you can so we can assist you quickly and efficiently.

If this still doesn't work, you can also email **[feedback@battlefront.com](mailto:feedback@battlefront.com)** with your question. Please include a detailed description of the problem as well as your hardware configuration in your email.

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